



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

A 436856

RURAL SCHOOL SURVEY
of NEW YORK STATE

LIBRARY OF THE
UNIVERSITY OF MICHIGAN



L A

337

141

v.5

*Govt't School. The U.S.
Pub. No. 1*

**RURAL SCHOOL SURVEY
of NEW YORK STATE**

JOINT COMMITTEE ON RURAL SCHOOLS

State Grange

G. W. DUNN

G. C. McNINCH

MRS. F. GATES

Department of Education

F. B. GILBERT

G. M. WILEY

R. P. SNYDER

Dairymen's League

E. R. EASTMAN, SECRETARY

N. F. WEBB

ALBERT MANNING

Farm Bureau Federation

H. C. MCKENZIE, VICE-CHAIRMAN

C. S. POST

W. G. MCINTOSH

H. G. REED

State College of Agriculture

J. E. BUTTERWORTH

G. A. WORKS, CHAIRMAN

P. J. KRUSE

Home Bureau Federation

MRS. M. E. ARMSTRONG

MRS. EDWARD YOUNG

MRS. A. E. BRIGDEN

State Teachers' Association

J. D. JONES

W. E. PIERCE

MYRTLE E. MACDONALD

Committee on Direction

G. A. WORKS, DIRECTOR

MRS. A. E. BRIGDEN, ASSISTANT DIRECTOR

G. M. WILEY, ASSISTANT DIRECTOR

RURAL SCHOOL SURVEY *of* NEW YORK STATE

SCHOOL BUILDINGS AND GROUNDS

By
JULIAN E. BUTTERWORTH
PROFESSOR OF RURAL EDUCATION
CORNELL UNIVERSITY

Ithaca, New York
1922

Joint Com.
8691
Educ.
5-2-1923

Copyright, 1922, by
GEORGE A. WORKS

WM. F. FELL CO. PRINTERS
PHILADELPHIA



FOREWORD

THIS study of the school buildings of rural communities of New York state should be suggestive to those who are interested in, or responsible for, the administration of rural schools. In addition to presenting a body of suggestive facts Dr. Butterworth has made two valuable contributions. His development of a score card that is especially adapted to the rating of the small school building should be of material assistance to rural school superintendents. Of fundamental importance is the philosophy of administration that characterizes his discussion of improvement of school facilities. The ideal of leadership in securing better school buildings permeates his whole discussion. Its significance is likely to be overlooked by the school administrator.

This survey of the rural schools of New York state was made possible by the Commonwealth Fund. This Fund not only furnished the money for the conduct of the survey, but also bore the expense of printing the results of the studies. A complete list of the reports will be found at the back of this volume.

GEO. A. WORKS

Director

TABLE OF CONTENTS

CHAP.		PAGE
	FOREWORD	5
	LISTS OF ILLUSTRATIONS AND DIAGRAMS	9
	LIST OF TABLES	11
I.	AN ANALYSIS OF EXISTING CONDITIONS	17
	A. One- and Two-Teacher Buildings	17
	1. How the Facts Were Collected	17
	2. A General Measure of These Buildings	36
	3. Problems in the Use of These General Measures	38
	4. Are the Types of Facilities Provided in Accordance with Modern Hygienic Requirements?	40
	5. Are the Facilities Provided Such as Enable the School to Perform in Full Its Function in the Community?	60
	6. Does the District Keep Its Existing Facilities in Such Condition that the Maximum of Educational Efficiency May be Secured?	65
	7. In What Respects Are the Buildings Strong and in What Are They Weak?	67
	8. On What Points do the Buildings Receive Additional Credit?	67
	9. Does the Community Protect Its Property Adequately?	71
	B. Buildings with Three or More Teachers	71
	1. How the Facts Were Collected	71
	2. The Scores	73
	3. Some General Information	77
	4. To What Extent Are Modern Facilities Provided?	79
	5. In What Respects Are These Buildings Strong and in What Are They Weak?	93
II.	A PROGRAM OF IMPROVEMENT	96
	A. What Are the Causes of Present Conditions?	96
	1. How Representative District Superintendents Analyze the Situation	96
	2. Causes of Present Conditions as Revealed by Statistical Analysis	98
	B. A More Enlightened Public Opinion Needed	116
	C. Higher and More Definite Minimum Standards	121
	1. The Present Situation	121
	2. Proposed Minimum Standards for One- and Two-Teacher Buildings	126
	D. Financial Penalties and Rewards	127
	1. A Suggestion of Procedure	127
	2. What Would It Cost to Improve a Typical One-Teacher Building?	129
	E. Summarizing Statement	129

LIST OF ILLUSTRATIONS

FACING
PAGE

Evidence of community pride in its school. Canandaigua No. 9, Ontario Co.	88
One type of recently constructed village school building. Consolidated school at Orchard Park, Erie Co.....	88
An illustration of a poor building in a small village.....	89
What one community did through community coöperation.....	120
What No. 11, Galway, Saratoga County, did.....	121

LIST OF DIAGRAMS

DIAGRAM	PAGE
1. Every school building in communities under 4,500 has been scored in the shaded areas. The seven sections into which the state was divided are indicated by the heavy lines.....	15
2. Median scores for one- and two-teacher buildings. The essential standard score is indicated at the right of the heavy vertical line; the additional score to the left of this line.....	38
3. Proportion that glass area is of floor space in one- and two-teacher schools. The standard is at least 1: 5.....	41
4. Translucency of shades in one- and two-teacher schools as indicated by the color.....	42
5. Window placement in one- and two-teacher schools. Light from one side is the standard.....	44
6. Types of heating apparatus in one- and two-teacher schools.....	45
7. Drinking facilities and towels in one- and two-teacher schools.....	47
8. Oiled floors in one- and two-teacher schools.....	48
9. Methods of sweeping and dusting in one- and two-teacher schools.....	49
10. Kinds of toilets in one- and two-teacher schools.....	51
11. Effectiveness of different kinds of toilets in one- and two-teacher schools.....	53
12. Types of pupils' desks in one- and two-teacher schools.....	56
13. Kinds of blackboard in one- and two-teacher schools.....	57
14. Height of lowest blackboard in one-teacher schools. The dotted line shows suitable height when there is but one height of blackboard....	59
15. Percentage of one- and two-teacher schools having a playground area equal to or greater than the amount shown.....	61
16. Kinds of artificial lighting in one- and two-teacher schools.....	64

DIAGRAM	PAGE
17. Condition of certain items in one- and two-teacher buildings.....	66
18. Median score of one- and two-teacher buildings on each of the items required for essential standard credit. The median is interpreted in terms of the percentage of a perfect essential standard score that is attained.....	69
19. Percentage of schools with three or more teachers having adjusted scores equal to or greater than those shown.....	76
20. Percentage of schools with three or more teachers having a ratio of glass area to floor space equal to or above the standard of 1: 5.....	81
21. Window placement in schools with three or more teachers.....	84
22. Fire protection in buildings with three or more teachers.....	87
23. Percentage of schools with three or more teachers having playground area per pupil equal to or larger than the amount shown.....	90
24. Median score of buildings with three or more teachers on each of the main groups of items considered. The median is interpreted in terms of the percentage of a perfect score that is attained.....	95
25. Relationship between median total scores (essential + additional) of one-teacher buildings and the average real valuations of the districts maintaining them. The dots show the average score for the different valuations. The line indicates the general trend.....	100
26. Relationship between average total scores (essential + additional) of two-teacher buildings and the average real valuations of the district maintaining them. The dots show the average score for the different valuations. The line indicates the general trend.....	102
27. Relationship between average total scores (essential + additional) of one- and two-teacher buildings and the dates of their construction. These curves were determined by plotting the average for the various dates of construction, and then the line drawn by inspection, greater weight being given to those points which represented the greater number of schools.....	107
28. Relationship between scores of buildings with three or more teachers and the dates of their construction. These curves were determined by plotting the averages for the various dates of construction, and then the line drawn by inspection, greater weight being given to those points which represented the greater number of schools.....	110

LIST OF TABLES

	PAGE
TABLE	
The standards	28
1. Essential standard and additional credit for one-teacher buildings	37
2. Essential standard and additional credit for two-teacher buildings	39
3. Proportion that glass area is of floor space	41
4. Color and type of shades	42
5. Window placement	43
6. Type of heating and ventilating apparatus used	44
7. Number of thermometers in schools	45
8. Source of water supply for schools	45
9. Certain conditions affecting the supply of pure water	46
10. Means for preventing contagion through drinking or washing	46
11. Is floor oiled?	48
12. Methods of sweeping and dusting	49
13. Number of schools having a first aid outfit	50
14. Kinds of toilets	51
14A. Comparison of the effectiveness of different types of toilets as to seclusion, lighting, ventilation, and general condition	52
15. Types of pupils' desks	55
16. Adjustment of seats and desks	56
17. Kind of blackboard	57
18. Minimum height of blackboard	58
19. Number of linear feet of blackboard	60
20. Size of school grounds	61
21. Playground apparatus	62
22. Distribution of play apparatus	63
23. Bulletin board facilities	63
24. Kind of artificial lighting provided	63
25. Schools having a telephone	64
26. Schools having a teacher's room	64
27. Special rooms	65
28. Condition of certain items in the building	66
29. Percentage distribution of essential standard credit	68
30. Distribution of additional credit among the various items	70
31. Amount of insurance in one-teacher schools	72
32. Original score for schools of three or more teachers	73
33. Adjusted score for buildings of three and more teachers	74

TABLE	PAGE
34. Material of construction.....	78
35. Number of stories.....	78
36. Shape of buildings.....	78
37. Distribution as to function of building.....	79
38. Distribution of schools, showing percentage of class, recitation, and study rooms in which the standard of 15 square feet of floor space per pupil is met.....	80
39. Distribution of schools, showing percentage of class, recitation, and study rooms in which the standard of 200 cubic feet of air space per pupil is met.....	80
40. Ratio of glass area to floor area in class, recitation, and study rooms.....	81
41. Distribution of schools, showing percentage of class, recitation, and study rooms in which the ratio of glass to floor area is below 1: 5.....	82
42. Percentage of class, recitation, and study rooms having different types of shades.....	83
43. Percentage of class, recitation, and study rooms having translucent and opaque shades (on basis of color).....	83
44. Percentage of class, recitation, and study rooms having light from different directions.....	84
45. Heating facilities.....	85
46. Thermostatic control.....	85
47. Various factors in fire protection.....	86
48. Methods of cleaning.....	87
49. Artificial lighting.....	88
50. Types of blackboard.....	88
51. Playground area per pupil in average daily attendance.....	89
52. Number of pieces of playground apparatus.....	90
53. Percentage of schools having certain kinds of special rooms.....	91
54. Distribution of the schools on the basis of the percentage of the total number studied receiving different percentages of a perfect score.....	94
55. Causes of present condition of school buildings as indicated by district superintendents.....	97
56. Distribution of one-teacher schools by total score (essential + additional) and real valuation of the district.....	99
57. Distribution of two-teacher schools by total score (essential + additional) and real valuation of the district.....	101
58. Distribution of schools, with three to four teachers, on basis of score of building and real valuation.....	103
59. Distribution of schools with five to nine teachers on basis of score of building and real valuation.....	104
60. Distribution of schools with ten or more teachers on basis of score of building and real valuation.....	105
61. Distribution of one-teacher schools by total score (essential + additional) and date of construction of the building.....	106

TABLE	PAGE
62. Distribution of two-teacher schools by total score (essential + additional) and date of construction of building	108
63. Distribution of three- to four-teacher schools by score and date of construction of building	109
64. Distribution of five- to nine-teacher schools by score and date of construction of building	112
65. Distribution of schools with ten or more teachers by score and date of construction of building	113
66. Orders for condemnation and alterations issued, 1912-1921	124
67. Distribution of orders for condemnation and alterations among the supervisory districts, 1912-1921	125
68. Estimated cost of improving a typical one-teacher building	130

SCHOOL BUILDINGS AND GROUNDS IN RURAL NEW YORK

IN PLANNING this study it was considered practicable to cover approximately one-fifth of the supervisory districts of the state. Accordingly 41 districts were selected from the 7 general regions into which the state had been divided for purposes

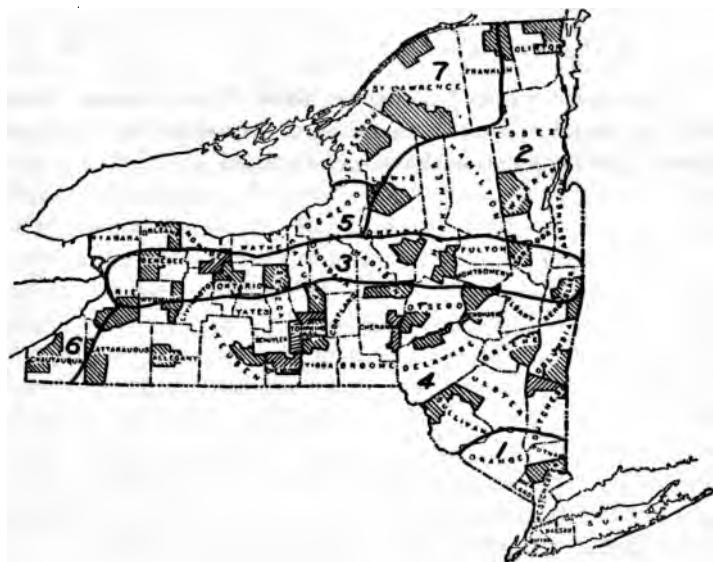


Diagram 1.—Every school building in communities under 4,500 has been scored in the shaded areas. The seven sections into which the state was divided are indicated by the heavy lines

of the survey in such a way as to secure supervisory districts that are typical. A secondary consideration was to choose, so far as possible, districts in which other phases of the survey were not

being studied intensively. One county, Tompkins, was covered completely. For various reasons—illness, pressure of work, etc.—data from only 37 of the 41 districts are to be found in this report. There is thus included 17.8 percent of the 208 supervisory districts, representing 34 of the 57 counties in the state outside of New York city. The map on p. 15 shows the location of these supervisory districts.

In all, 1,661 occupied school buildings have been studied. This is about 16 percent of all schoolhouses in the territory under the jurisdiction of district superintendents. These are divided as follows:

One teacher.....	1,438
Two teachers.....	77
Three and four teachers.....	31
Five to nine teachers.....	70
Ten teachers and over.....	45

All occupied school buildings in these 37 supervisory districts that are found in rural communities as defined in New York state (under 4,500 population) have been included.

I. AN ANALYSIS OF EXISTING CONDITIONS

A. ONE- AND TWO-TEACHER BUILDINGS

1. How THE FACTS WERE COLLECTED

In order to secure data that would be as comprehensive and significant as possible the well-known device of using a score card was employed. This procedure has certain advantages over the method that has frequently been used in state surveys of collecting facts regarding a few phases only of the school building, such as lighting, heating, cleaning methods, etc. It gives a more comprehensive view of such buildings, since all the significant phases, instead of a few only, are included. Communities may thus be stimulated to think of all the important phases of their school building. In addition, the details of any phase of a building may be studied intensively for the reason that the facts necessary for this purpose have already been collected as the basis for scoring. A third advantage is found in the opportunity, through having comprehensive facts, of stating the worth of a building in terms of, say, 1,000 points. Thus by including specified factors interpreted in terms of specified standards one is able to say that a building is entitled to 545 or 790 or 950 points. In this way we avoid the use of such indefinite terms as "poor," "good," and "excellent."

A score card devised particularly to meet the conditions in one- and two-teacher districts was used. It is obvious that, because of lack of sufficient wealth, modern conveniences, and a large number of children or teachers, the standards of one- and two-teacher buildings cannot be the same as for the larger ones. Thus, a flush toilet system, electric lights, a community room, running water, and similar factors may be possible and necessary for the village schools when they are not for the smaller ones in the open country.

In making this score card the services of some 80 persons—state

rural school supervisors, state school building specialists, local rural school administrators, and professors of rural education—were utilized. A small number of persons, carefully selected because of ability, experience, and interest, was considered to be of greater value in dealing with such a problem than a large number used without discrimination. Since the methods by which the score card was constructed have been described elsewhere,¹ they will not be repeated here.

From contact with farm people in the state the writer came to realize that the question of defining a set of standards that would, on the one hand, represent professional opinion and recent research, and, on the other hand, seem to rural folks to be reasonable and attainable, was a difficult problem, and from the point of view of the practical effect of the study one of very great importance. Standards should not seem to the rural population to be unattainable since a group in that state of mind is not stimulated to make progress. On the other hand, the writer is confident that the typical farmer of New York will not be satisfied to have his school buildings measured by standards that are below those of other states or that fail to provide conditions and facilities essential to the physical, moral and intellectual development of his children. He will ask that standards be reasonable, but not that they be such as are designed to satisfy a feeling of complacency.

In setting standards for one- and two-teacher buildings that would satisfy these requirements the following procedure was followed:

1. A study of the most recent literature on the subject and of the requirements and suggestions of various states was made and the conclusions put into definite form.

2. The material so collected was then submitted to state rural school supervisors and to a group of New York district superintendents with the request that they grade the various standards suggested as to whether they were "s" (satisfactory), "h" (too high), or "l" (too low), for use in making a survey of buildings in their state. They were also asked to make such modifications, where this seemed desirable, as would express their own conception

¹ Journal of Rural Education, September, 1922.

of what the standard should be. These two suggestions were given as guides:

"1. The school building and its grounds should be evaluated from the point of view of contributing to the effective training of children: provision for intellectual development; facilities for physical development; safeguarding health and morals.

"2. Such standards as are required should be as much of a step toward the ideal as possible, but they should not be such as to seem to the typical rural school patron to be utterly unattainable."

Reports were had from 25 state rural school supervisors and from 24 New York district superintendents. On the basis of these returns certain changes were made. The standards finally employed are therefore submitted as representing as nearly as is possible under present conditions a progressive, yet reasonable and attainable, basis for measuring one- and two-teacher buildings.

One of the important problems connected with the construction of the score card was what to do with those factors in a building—*e. g.*, teachers' room, work room, telephone, etc.—that, though desirable, are found infrequently and may, therefore, be considered as more or less ideal under present conditions. To require them would be impracticable. One way of meeting the difficulty would be to set 1,000 points as the value to be given an *ideal* building, the score for a reasonably effective one being set at some point that would include all the desired factors whether that score is 600 or 900. Though this procedure was more simple it was discarded in favor of another device.

This device divides possible building standards into two groups: those that should be required of all; and those that are in advance of what may be expected of most schools. The former set of standard are called "essential"; the latter, "additional." Under this plan a building that may be accepted as satisfactory will receive the full 1,000 points of essential credit, while a really modern building will have from 275 to 300 points of additional credit. The score of the sample building given is 606 + 32. This indicates that while it has a few factors that justify additional credit it falls far short of meeting the essential requirements.

This plan has several advantages over the plan first considered.

(1) It meets better the farmer's state of mind in that he is less likely to think of it as involving impracticable standards. He is more likely to be stimulated both to meet the essential standards and to secure additional credit by providing better facilities. (2) Additional credit should not only be given for other factors than those required in the essential standards, such as a work room, but better facilities than those included in the essential standards may be desired in practically any factor. Thus it should be possible to give additional credit for a flush toilet or for movable chair-desks or for a furnace. It is possible to do so under this plan but not under the first plan. (3) A satisfactory score implies that those factors essential to accomplishing the purposes of a rural building are all included and that no other factors may be substituted for them. A play room cannot be a substitute for a pure water supply nor a telephone for a sufficiently large playground, yet this would be possible where a specified number out of 1,000 points is set as the minimum. The plan accepted meets this difficulty. (4) To the extent that the division between "essential" and "additional" is acceptable, this device performs the service of suggesting to communities that the defects in the essential standards should be corrected before much energy is expended on the additional items. A lack of balance on this point in school building construction is no unusual matter.

At the outset the director of the section on School Buildings had to decide, in view of the amount of funds that could properly be given to the study of this problem, between the employment of a small number of experienced scorers reaching a limited number of schools¹ and the use of a larger number of scorers with less experience reaching a greater number of schools. The objections to each method are clear. After considerable thought the second procedure was adopted for the reason that it was important that a fair proportion of all school buildings in the state should be reached in order that the farmer have confidence in the conclusions. Furthermore, it was believed that a group of district superintendents could be trained to collect and interpret, on such an objective problem,

¹ By this procedure about one-third of the one- and two-teacher schools actually studied could have been scored.

data that would have scientific value. The following procedure was followed: (1) The co-operating superintendents were met in groups of from two to eight for purpose of training. Two schools were visited and the buildings scored, discussion helping to reduce differences in methods of recording data and in interpreting them in terms of the standards. (2) The superintendents were invited to send in their first score cards for criticism and most of them did so. (3) When the results were turned in the work of each superintendent was checked¹ and necessary corrections were made. The writer, therefore, submits these data in the confident belief that they represent an unusually complete, accurate, and uniform interpretation of the situation. Too much credit cannot be given those superintendents whose results are included in this study.² They

¹ The checking method tested two factors in the accuracy of the work: (1) Care in recording data in a complete and uniform fashion; (2) care in interpreting these data in terms of the "credits" or "points" to be given. The first factor considered: Whether either "S" (satisfactory) or "U" (unsatisfactory) were used in describing the condition of the various items; whether a "U" condition was properly described so that the deficiencies were clear to the reader; whether deficiencies were filled in (*e. g.*, item 16 of score card) where deduction was made from full credit; whether the "essential" and the "additional" credits were summarized separately; the frequency with which desks were reported as "S" (an index of a reasonably critical attitude toward what is found); the frequency with which the adjustment of desks was reported as "S"; and the frequency with which credit was given for an item where the facts were not recorded.

The second factor tested the accuracy of the scorer in interpreting the facts in terms of the standards. For this purpose items 1, 3, 4, 6, 10, 15, 24a, 24b, 26, 29a, 41, and 43 were selected as good test situations.

In about a dozen cases it was found that the scorer had made errors in one or two particulars to a sufficient extent to require correction. In one case the scorer completely revised his work; in a second case partial revision was necessary; in a third case the entire material was thrown out.

I am indebted to Mr. W. W. Reitz, graduate student in Rural Education, for the careful manner in which this checking was done.

² The following participated in collecting the data for one- and two-teacher schools herein presented:

County	Superintendent	Supervisory District
Allegany.....	John D. Jones	Second
Cattaraugus.....	Edw. A. Stratton	Fifth
Cayuga.....	Mabelle L. Rodger	Fifth
Chautauqua.....	James G. Pratt	Fourth
Chemung.....	Walter C. King	First
Chenango.....	Mary L. Isbell	Fifth
Clinton.....	Clara E. Soden	Third
Columbia.....	Mathew G. Rickey	Third

(Table continued at foot of page 22.)

have done a piece of work that called for a tremendous expenditure of energy and have done it in a manner to command respect. The writer is also greatly indebted to Mr. F. H. Wood, chief of the Division of Buildings and Grounds of the State Department of Education. He has not only made available the resources of his Division but has given unstintedly of his own time and energy whenever demands were made upon them.

On the following pages is presented a copy of the score card filled out for a fairly typical one-teacher school.

SUGGESTIONS FOR THE USE OF THIS SCORE CARD

1. Fill in the general information called for near the top of the first page—"year schoolhouse was built," etc.
2. Make the measurements called for regarding the building—width, length, height, etc.—and record the figures. While it may seem that there are many such facts, remember that every one is

County	Superintendent	Supervisory District
Delaware	Milton G. Nelson	Fifth
Dutchess	Frank O. Green	Fourth
Erie	William E. Pierce	Third
Franklin	Myrtle E. MacDonald	First
Genesee	H. William Dyer	First
Greene	Thomas C. Perry	First
Herkimer	Silas C. Kimm	Second
Jefferson	Mrs. G. L. DeOloqui	Sixth
Lewis	A. Winfield Trainor	Fourth
Madison	Irving S. Sears	First
Monroe	Mark B. Furman	Second
Oneida	Glenn G. Steele	First
Ontario	Leon J. Cook	First
Orleans	Chas. W. Smith	Third
Otsego	Harrison Cossaart	Fifth
Rensselaer	Mrs. Adelaide W. Gardner	Second
St. Lawrence	William T. Clark	First
Saratoga	Virgil C. Warriner	Fourth
Schoharie	Lou Messenger	Second
Seneca	Ralph W. Eldridge	Third
Steuben	Chas. B. Earl	Second
Sullivan	Winfred Morrow	Second
Tompkins	Chas. S. Hick	Second
Warren	Fred A. Beardsley	First
Westchester	Hattie K. Buck	Second
Wyoming	John D. Biglow	Third
	Mrs. Rose Minnick	Third
	Robert D. Knapp	Fourth
	George H. Stratton	Third

significant in some way to the proper housing of school children. Remember, too, that accurate facts are the raw material for making accurate conclusions.

BUTTERWORTH SCHOOL-BUILDING SCORE CARD																																																																																													
Devised by JULIAN E. BUTTERWORTH <i>Professor of Rural Education, Cornell University</i>																																																																																													
FOR ONE-TEACHER SCHOOL BUILDINGS																																																																																													
Name of School	<i>Fayville I.</i>	County	<i>Sullivan</i>																																																																																										
Score	<i>M. J. Moore</i>	Date	<i>June 9, 1921</i>																																																																																										
Year schoolhouse was built	<i>1885</i>	Assessed valuation of district	<i>\$ 62,604</i>																																																																																										
Year of addition or alteration		In tide to school property																																																																																											
costing \$500 or over		properly recorded?																																																																																											
Estimated present value of buildings and grounds		Amount for which building is insured	<i>\$ 600</i>																																																																																										
<table border="0"> <tr> <td>1. Size of classroom</td> <td>5. Shades</td> <td>45. Is number sufficient? <i>yes</i></td> </tr> <tr> <td>2. Width</td> <td>21. Color <i>green</i></td> <td>46. Number of sizes</td> </tr> <tr> <td>3. Length</td> <td>24. Type <i>single window</i></td> <td>47. Is this number sufficient? <i>no</i></td> </tr> <tr> <td>4. Height</td> <td>23. Condition <i>poor</i></td> <td>48. % cases where size is not properly adjusted</td> </tr> <tr> <td>5. Enrollment</td> <td>6. Floor</td> <td>49. % cases where size is not properly adjusted</td> </tr> <tr> <td>6. Floor area</td> <td>26. Material <i>wood</i>; finish <i>plain wood</i></td> <td>50. Condition <i>poor</i></td> </tr> <tr> <td>7. Area per pupil of capacity</td> <td>27. Condition <i>old and really worn</i></td> <td>51. Type of teacher's desk <i>solid</i></td> </tr> <tr> <td>8. Area per pupil of enrollment</td> <td>7. Walls</td> <td>52. Type of teacher's chair <i>solid</i></td> </tr> <tr> <td>9. Cubical contents</td> <td>28. Kind <i>plaster</i></td> <td>53. Condition <i>poor</i></td> </tr> <tr> <td>10. Cu. ft. per pupil of room capacity</td> <td>29. Finish <i>plaster</i></td> <td>15. Seating arrangements</td> </tr> <tr> <td>11. Cu. ft. per pupil of enrollment</td> <td>30. Condition <i>old and really worn</i></td> <td>54. Are seats arranged on long axis of room? <i>no</i></td> </tr> <tr> <td>2. Shape of classroom</td> <td>8. Color scheme</td> <td>55. Width of aisle <i>11'</i></td> </tr> <tr> <td>12. Ratio width to length</td> <td>31. Ceiling <i>wood</i>; walls <i>plaster</i></td> <td>56. Minimum distance between desks and inside walls <i>7'</i>; desks and window walls <i>7'</i></td> </tr> <tr> <td>3. Window placement</td> <td>9. Inside finish <i>soft fabric</i></td> <td>57. Are rows of seats arranged so far as possible according to size? <i>no</i></td> </tr> <tr> <td>13. Number of windows for lighting on: front...; rear...; right...; left...</td> <td>32. Material <i>soft fabric</i></td> <td>58. % cases where distance between desk and seat is not satisfactory</td> </tr> <tr> <td>14. Distance between window and front wall</td> <td>33. Color <i>green</i></td> <td></td> </tr> <tr> <td>15. Height of window sill</td> <td>34. Workmanship <i>poor</i></td> <td></td> </tr> <tr> <td>16. Distance top of windows to ceiling</td> <td>35. Simplicity <i>3</i></td> <td></td> </tr> <tr> <td>17. Distance between windows on left</td> <td>10. Blackboard</td> <td></td> </tr> <tr> <td>18. Ratio height of windows to width of room</td> <td>36. Kind <i>wood</i></td> <td></td> </tr> <tr> <td>19. If ventilation windows, name requirements not met</td> <td>37. Location <i>front</i></td> <td>14. Closets</td> </tr> <tr> <td>4. Glass area</td> <td>38. Height from floor <i>3'</i></td> <td>59. Facilities provided <i>closets</i></td> </tr> <tr> <td>20. Front...; rear...; right...; left...</td> <td>39. Number lines across</td> <td>60. Are they ample? <i>yes</i></td> </tr> <tr> <td>21. Total area</td> <td>40. Condition <i>poor</i></td> <td>15. Clock</td> </tr> <tr> <td>22. Ratio glass area to floor area</td> <td>11. Bulletin board</td> <td>61. Kind <i>0</i></td> </tr> <tr> <td></td> <td>41. Kind <i>0</i></td> <td>16. Pupil room</td> </tr> <tr> <td></td> <td>42. Size</td> <td>62. Facilities provided <i>absent</i></td> </tr> <tr> <td></td> <td>43. Is it within reach of children?</td> <td>63. Deficiencies <i>bulletin board</i></td> </tr> <tr> <td></td> <td>12. Desks</td> <td></td> </tr> <tr> <td></td> <td>44. Kind of pupils' desks <i>single, double, adjustable</i></td> <td></td> </tr> </table>				1. Size of classroom	5. Shades	45. Is number sufficient? <i>yes</i>	2. Width	21. Color <i>green</i>	46. Number of sizes	3. Length	24. Type <i>single window</i>	47. Is this number sufficient? <i>no</i>	4. Height	23. Condition <i>poor</i>	48. % cases where size is not properly adjusted	5. Enrollment	6. Floor	49. % cases where size is not properly adjusted	6. Floor area	26. Material <i>wood</i> ; finish <i>plain wood</i>	50. Condition <i>poor</i>	7. Area per pupil of capacity	27. Condition <i>old and really worn</i>	51. Type of teacher's desk <i>solid</i>	8. Area per pupil of enrollment	7. Walls	52. Type of teacher's chair <i>solid</i>	9. Cubical contents	28. Kind <i>plaster</i>	53. Condition <i>poor</i>	10. Cu. ft. per pupil of room capacity	29. Finish <i>plaster</i>	15. Seating arrangements	11. Cu. ft. per pupil of enrollment	30. Condition <i>old and really worn</i>	54. Are seats arranged on long axis of room? <i>no</i>	2. Shape of classroom	8. Color scheme	55. Width of aisle <i>11'</i>	12. Ratio width to length	31. Ceiling <i>wood</i> ; walls <i>plaster</i>	56. Minimum distance between desks and inside walls <i>7'</i> ; desks and window walls <i>7'</i>	3. Window placement	9. Inside finish <i>soft fabric</i>	57. Are rows of seats arranged so far as possible according to size? <i>no</i>	13. Number of windows for lighting on: front...; rear...; right...; left...	32. Material <i>soft fabric</i>	58. % cases where distance between desk and seat is not satisfactory	14. Distance between window and front wall	33. Color <i>green</i>		15. Height of window sill	34. Workmanship <i>poor</i>		16. Distance top of windows to ceiling	35. Simplicity <i>3</i>		17. Distance between windows on left	10. Blackboard		18. Ratio height of windows to width of room	36. Kind <i>wood</i>		19. If ventilation windows, name requirements not met	37. Location <i>front</i>	14. Closets	4. Glass area	38. Height from floor <i>3'</i>	59. Facilities provided <i>closets</i>	20. Front...; rear...; right...; left...	39. Number lines across	60. Are they ample? <i>yes</i>	21. Total area	40. Condition <i>poor</i>	15. Clock	22. Ratio glass area to floor area	11. Bulletin board	61. Kind <i>0</i>		41. Kind <i>0</i>	16. Pupil room		42. Size	62. Facilities provided <i>absent</i>		43. Is it within reach of children?	63. Deficiencies <i>bulletin board</i>		12. Desks			44. Kind of pupils' desks <i>single, double, adjustable</i>	
1. Size of classroom	5. Shades	45. Is number sufficient? <i>yes</i>																																																																																											
2. Width	21. Color <i>green</i>	46. Number of sizes																																																																																											
3. Length	24. Type <i>single window</i>	47. Is this number sufficient? <i>no</i>																																																																																											
4. Height	23. Condition <i>poor</i>	48. % cases where size is not properly adjusted																																																																																											
5. Enrollment	6. Floor	49. % cases where size is not properly adjusted																																																																																											
6. Floor area	26. Material <i>wood</i> ; finish <i>plain wood</i>	50. Condition <i>poor</i>																																																																																											
7. Area per pupil of capacity	27. Condition <i>old and really worn</i>	51. Type of teacher's desk <i>solid</i>																																																																																											
8. Area per pupil of enrollment	7. Walls	52. Type of teacher's chair <i>solid</i>																																																																																											
9. Cubical contents	28. Kind <i>plaster</i>	53. Condition <i>poor</i>																																																																																											
10. Cu. ft. per pupil of room capacity	29. Finish <i>plaster</i>	15. Seating arrangements																																																																																											
11. Cu. ft. per pupil of enrollment	30. Condition <i>old and really worn</i>	54. Are seats arranged on long axis of room? <i>no</i>																																																																																											
2. Shape of classroom	8. Color scheme	55. Width of aisle <i>11'</i>																																																																																											
12. Ratio width to length	31. Ceiling <i>wood</i> ; walls <i>plaster</i>	56. Minimum distance between desks and inside walls <i>7'</i> ; desks and window walls <i>7'</i>																																																																																											
3. Window placement	9. Inside finish <i>soft fabric</i>	57. Are rows of seats arranged so far as possible according to size? <i>no</i>																																																																																											
13. Number of windows for lighting on: front...; rear...; right...; left...	32. Material <i>soft fabric</i>	58. % cases where distance between desk and seat is not satisfactory																																																																																											
14. Distance between window and front wall	33. Color <i>green</i>																																																																																												
15. Height of window sill	34. Workmanship <i>poor</i>																																																																																												
16. Distance top of windows to ceiling	35. Simplicity <i>3</i>																																																																																												
17. Distance between windows on left	10. Blackboard																																																																																												
18. Ratio height of windows to width of room	36. Kind <i>wood</i>																																																																																												
19. If ventilation windows, name requirements not met	37. Location <i>front</i>	14. Closets																																																																																											
4. Glass area	38. Height from floor <i>3'</i>	59. Facilities provided <i>closets</i>																																																																																											
20. Front...; rear...; right...; left...	39. Number lines across	60. Are they ample? <i>yes</i>																																																																																											
21. Total area	40. Condition <i>poor</i>	15. Clock																																																																																											
22. Ratio glass area to floor area	11. Bulletin board	61. Kind <i>0</i>																																																																																											
	41. Kind <i>0</i>	16. Pupil room																																																																																											
	42. Size	62. Facilities provided <i>absent</i>																																																																																											
	43. Is it within reach of children?	63. Deficiencies <i>bulletin board</i>																																																																																											
	12. Desks																																																																																												
	44. Kind of pupils' desks <i>single, double, adjustable</i>																																																																																												

Published by World Book Company, Yonkers-on-Hudson, New York, and 2126 Prairie Avenue, Chicago
Copyright, 1921, by World Book Company. All rights reserved.

3. In recording the *condition* of an item, e. g., shades, do not say "good," "fair," "bad," etc. These words mean different things to different persons. Use, instead, "S" (satisfactory) or "U"

(unsatisfactory). These words may convey more nearly the same idea to different persons if one understands that "S" means that the condition of the item is such as not to interfere with the purpose of

17. Cloakroom		82. Area foul air outlet.....	0	30. Telephone	
64. Facilities provided	<i>mettles and class room</i>	83. Is there a thermometer?.....	0	112. Is there one?.....	0
65. Deficiencies	.....	84. Deficiencies	<i>front light broken, tables cracked, heat sufficient, though</i>	31. Bell	<i>hand</i>
18. Workroom	0	85. Fire extinguisher	0	113. Kind	
66. Facilities provided	0	86. Kind		32. First aid outfit	0
67. Deficiencies	.....	87. Cleaning system	<i>broom broom</i>	114. Is there one?.....	0
19. Storeroom	0	88. Method of sweeping	<i>broom broom</i>	33. Mail box	
68. Facilities provided	0	89. Method of dusting	<i>broom broom</i>	115. Is it satisfactory?.....	0
69. Deficiencies	.....	90. Is floor oiled?.....	no	34. Flag and pole	<i>3' X 5'</i>
20. Library	0	91. Water supply	<i>natural spring</i>	116. Site of flag.....	
70. Facilities provided	<i>approach</i>	92. How far is water carried?.....	near	117. Location of pole.....	
71. Deficiencies	.....	93. Distance of well from nearest stable, outhouse, or other possible source of contamination, 40'. 94. Other facts.		118. Condition of flag.....	
21. Teacher's room	0	95. Drinking fountains provided	<i>one few</i>	119. Deficiencies	
72. Size	.....	96. If no fountain, are paper cups or individual drinking cups used?	no	35. Vestibule	<i>7' 6" X 7' 3"</i>
73. Equipment	.....	97. Are individual drinking cups adequately protected when not in use?	.....	120. Size	
74. Deficiencies	.....	98. Washing facilities provided	<i>barrel</i>	121. Is it well lighted?.....	yes
22. Playroom	0	99. Are individual towels or paper towels provided?.....	no	122. For what purposes used?	<i>washing - wash</i>
75. Facilities provided	0	100. Is soap provided?.....	no	123. Other deficiencies	<i>body served</i>
76. Deficiencies	.....	101. Is there a mirror?.....	no	36. Material of construction	
23. Neighborhood room	0	28. Artificial lighting		124. Material	
77. Facilities provided	0	102. Kind	0	125. Color of paint.....	
78. Deficiencies	.....	103. Is it sufficient?.....		37. Foundation	
24. Heat and ventilation	0	104. Rooms not lighted.....		126. Material	
79. Facilities	<i>mettles</i>	29. Toilets		127. Height	
80. Grate area	<i>648 sq. in.</i>	105. Kind	<i>outdoor</i>	128. Condition	
81. Area air intake	.....	106. Location	<i>back</i>	38. Roof	
		107. Is there sufficient seclusion?.....	no	129. Material	
		108. Are they well lighted?.....	yes	130. Condition	<i>3 blown off</i>
		109. Are they well ventilated?.....	yes	39. Condition of repair	
		110. Are they adequately equipped?.....	yes	131. Repairs needed	<i>Paint</i>
		111. Condition	<i>poorly</i>	132. Are they well lighted?.....	<i>new</i>
		112. Condition	<i>poorly</i>	133. Are they well ventilated?.....	<i>old</i>
		113. Condition	<i>poorly</i>	134. Orientation	<i>met by east</i>
		114. Condition	<i>poorly</i>	135. Is this the most satisfactory orientation under the conditions?.....	<i>yes</i>

that item in the school. Thus, if any of the shades are badly worn or if any of their rollers are broken, the condition is clearly "U."

4. When a "U" condition is found, describe briefly why it is

unsatisfactory, as, "3 badly worn; 2 rollers broken." You then have detailed information that will tell you how unsatisfactory the condition is and will make it unnecessary for you to go back to the building if you wish to tell another person exactly what is wrong.

THE SCORE

Note. In column 2 below place the credit allowed each item as "essential standard credit"; in column 4 place the "additional credit" allowed in terms of the standards and values presented in the bulletin that is designed to accompany this scale. The various credits may be summarized in columns 3 and 5 under the different group headings. If additional credit is granted for items not given in the bulletin, these should be included at the bottom of this page under "Other Items."

	Essential Standard Credit		Additional Credit			Essential Standard Credit		Additional Credit	
	1	2	3	4		1	2	3	4
I. The Classroom.....	240	198	12		28. Artificial lighting.....	10	0		
1. Size.....	40	40	10		29. Tables.....	20	10		
2. Shape.....	20	20	2		a. Kind.....	10			
3. Window placement.....	15	10			b. Placement.....	10	5		
4. Glass area.....	30	20			c. Condition.....	20	15		
5. Shading.....	15	5			d. Adequacy.....	15	15		
6. Floor.....	15	8			30. Telephone.....	0	—		
7. Walls.....	15	5			31. Bell.....	5	5		
8. Color scheme.....	20	10			32. First aid outfit.....	10	0		
9. Inside finish.....	15	5			33. Mail box.....	5	0		
10. Blackboard.....	30	10			34. Flag and pole.....	10	10		
11. Bulletin board.....	10	0			IV. The building in general.....	155	165	15	
12. Desks.....					25. Ventilate.....	20	15		
a. Pupils.....	40	20			26. Material of construction.....	25	25		
b. Teachers.....	10	5			27. Foundation.....	15	10		
c. Seating arrangement.....	25	15			31. Roof.....	20	18	10	
d. Closets.....	15	15			39. Condition of repair.....	30	20		
e. Clock.....	5	0			40. Location on grounds.....	20	20		
12. Other rooms or room facilities.....	50	35	0		41. Orientation.....	25	25	5	
13. Fuel room.....	20	15			42. Architectural appearance.....	0	—		
17. Classroom.....	25	5			V. The grounds.....	170	170	0	
18. Workrooms.....	0	—			43. Size.....	25	15		
19. Storeroom.....	15	0			44. Shape.....	10	10		
20. Library.....	20	15			45. Slope and drainage.....	25	25		
21. Teacher's room.....	0	—			46. Condition.....	20	20		
22. Playroom.....	0	—			47. Fencing.....	5	0		
23. Neighborhood room.....	0	—			48. Walks.....	10	0		
III. General Service Equipment.....	255	120	5		49. Playground apparatus.....	25	0		
24. Heat and ventilation.....					50. Environment.....	25	25		
a. Kind.....	30	15			51. Accessibility.....	25	25		
b. Adequacy.....	30	20			Other items:				
c. Thermometer.....	10	0			1.				
d. Fire extinguisher.....	0	—			2.				
e. Cleaning system.....	20	5			3.				
f. Water supply.....					4.				
a. Source.....	25	10			5.				
b. Facilities for drinking.....	20	5			6.				
c. Facilities for washing.....	15	5			Total Score.....	606	32		

5. Where the term "deficiencies" is found, describe briefly what is lacking. See the sample score card for illustration.

6. After recording all the facts begin the work of assigning value to each of the items given on page 3 of the score card (see p. 25). Compare, for example, the size of the class room you are studying with the

42. Architectural appearance 136. Desirable features.....	46. Condition 143. Unpleasant objects..... <i>odors</i>	151. Condition
137. Undesirable features..... <i>poor, cluttered</i>	144. Attractive features.....	152. Environment 153. Desirable features..... <i>modern</i>
43. Size of grounds 138. Number sq. rds.: <i>6.8</i>	47. Fencing 145. Kind <i>old stone</i>	154. Accessibility 155. How far is school from one of the main highways of the district? <i>0.7 miles</i>
139. For what purpose is more land than 160 sq. rds. needed under these conditions? <i>nowhere</i>	146. Height	156. Percentage of homes in district within 1 mile. <i>47%</i> ; 1-1/2 miles <i>21%</i> ; over 1 1/2 miles..... <i>32%</i>
44. Shape of grounds 140. Shape described..... <i>rectangle</i>	48. Walks 148. Kind <i>O</i>	157. Is transportation or public ex- pense provided for pupils over 1 1/2 miles away? <i>No</i>
45. Slope and drainage 141. Are grounds fairly level? <i>yes</i>	49. Playground apparatus 150. Apparatus <i>O</i>	
142. Are they well drained?		

standards given as to "number of square feet of floor space," and "number of cubic feet of air space per pupil." If it fully meets the standards, record in column 2 of the score card the full value

"40." If it does not fully meet the standards, column 2 of the Standards which describes situations not up to the essential, yet those that are frequently found, will give you some aid in determining how much credit you should allow. If you find more space than the essential standard requires, then the school is entitled to additional credit on this item. Column 3 of the Standards will aid you in giving a value. Record this in column 4 of the score card. You will note that the data are arranged in the same order as the items on the score card and in the Standards so as to make the comparison easier.

7. You will, of course, find situations frequently that are different from any descriptions given in the Standards. Use your best judgment as to what credit should be allowed. If you do much scoring of buildings, it will contribute to the uniformity of your grading if you will write down in the Standards a brief description of the situation, together with the credit you have allowed. *Note that, in all values given, an "S" condition is assumed.* Thus, if the shades are such as to color and type to justify only the 5 points suggested in column 2 of the Standards, a reduction from that credit must still be made if the condition is unsatisfactory.

8. After filling in the credit for all the items add up the figures and record the totals at the bottom of the page. Keep the "essential" credit and the "additional" credit separate. The score in the building analyzed on the sample score card shows that it lacks 394 points (1,000 - 606) of meeting desirable standards but that in certain respects it more than meets such standards. You now have the information that not only tells you exactly where your building stands on the scale, but also what improvements need to be made in order to provide better conditions for the children.

9. Where columns 2 or 3 of the Standards are blank, it does not mean that no such situations exist; rather that it has been difficult to state the standards so as to convey a uniform meaning. In such cases use your best judgment in assigning values.

10. Note that for two-teacher buildings a few changes have been stated on the last page of the Standards. Data for the second classroom of such a building may be recorded with that of the first

class room thus: width 20'-22'. In assigning values for these two class rooms the facts regarding both must, of course, be considered.

The standards used in interpreting the facts and in assigning values to situations are presented herewith:

THE STANDARDS¹

1. ESSENTIAL STANDARDS: These standards represent the least that may be expected of an effective one-teacher school building and its grounds.	2. LESS THAN ESSENTIAL: This column describes typical conditions that are <i>below</i> those that should be accepted as essential and gives the values that should be assigned.	3. MORE THAN ESSENTIAL: This column describes typical conditions that are <i>above</i> those that may be accepted as essential and gives values that should be assigned as additional credit.
1. Size Score: 40 (a) 15 square feet of floor space per pupil of room capacity (number of sittings). (b) 200 cubic feet of air space per pupil of room capacity (number of sittings).	Score: 20 (a) 12 square feet of floor space per pupil of room capacity. (b) 120 cubic feet of air space per pupil of room capacity.	Score: 10 (a) 20 square feet of floor space per pupil of room capacity. (b) 240 cubic feet of air space per pupil of room capacity.
2. Shape of room Score: 20 (a) Rectangular: width 4 to length 5; or width 2 to length 3 (approximately).	Score: 10 (a) Square or nearly so.	Score: 5 (a) Rectangular: width 3 to length 4.
3. Window placement Score: 35 (a) Windows grouped on left of pupils. Ventilation windows may be permitted if they are placed well toward the top of the rear or right walls, are small, and are covered with opaque curtains. (b) Any large area without windows to be at front end of side wall. Windows should not extend beyond front row of seats. (c) Not over ten inches between windows. (d) Windows between 3 and 4 feet from floor with distance from floor to top of window equal to one-half width of room.	Score: 10 (a) Windows on two sides and rear. (b) Distance between windows at front and at rear end of side wall about equal. (c) 6 feet (approximately) between windows. (d) Windows between 3 and 4 feet from floor with about $2\frac{1}{2}$ feet from top of window to ceiling.	
4. Glass area Score: 30 (a) Ratio to floor space 1:5 (1:4 if light comes from north or side that is considerably shaded).	Score: 10 (a) Ratio of floor space 1:9 (1:7 if light comes from north or from side that is considerably shaded).	

¹ The score card is published by the World Book Co., Yonkers, N. Y. Copies of these standards may be secured without cost by asking the New York State College of Agriculture, Ithaca, N. Y., for the bulletin entitled: "Improving the School Building Facilities in One- and Two-teacher Districts Through Measurement."

THE STANDARDS—Continued

5. Shades	Score: 15	
(a) Translucent.		Score: 5
(b) Fastened so as to protect from sun without shutting off light unnecessarily; movable or double mounted with one curtain at top of window and one at bottom.		(a) Dark green color. (b) Single shade fastened at top.
6. Floor	Score: 15	
(a) Rift-sawed, hard pine relatively free from knots, closely laid (or equivalent material).		Score: 5
(b) Double floor.		(a) Soft, native timber. (b) Same. ¹
7. Walls	Score: 15	
(a) Ordinary plaster or commonly accepted substitutes, such as beaver board or plaster board.		Score: 5
		(a) Matched lumber.
8. Color scheme	Score: 20	
(a) Walls and ceiling in some light reflecting color pleasing in its general effect.		Score: 5
		(a) Prevailing color dark blue, dark green or other light-absorbing color.
9. Inside finish	Score: 15	
(a) Good quality material, local or otherwise.		Score: 10
(b) Tastefully painted or varnished.		(a) Walls: southern exposure—light gray or light green or light drab; northern exposure—light cream or buff.
(c) Good workmanship.		(b) Ceiling: white, slightly modified by wall color.
(d) Without unnecessary carving or fluting.		(c) Dado: darker, harmonious color.
10. Blackboard	Score: 30	
(a) Slate.		Score: 5
(b) Minimum of about 20 linear feet for school with 15 or more pupils, or about 10 linear feet for school with fewer than 15 pupils; none on window wall.		(a) Hard wood.
(c) Chalk and eraser tray.		(b) Same.
(d) Two heights from floor: 26 inches and 32 inches. One height will be acceptable if not over 28 inches from floor and if board is at least 3½ feet wide.		(c) Same. (d) Same.
11. Bulletin board	Score: 10	
(a) Soft wood covered with burlap or beaver board.		Score: 10
(b) Minimum size 500 square inches.		(a) Painted boards or plaster.
(c) Within reach of children so they may read material on it readily.		(b) Minimum space the same; some blackboard between windows.
		(c) Same. (d) Same.
		Score: 0
		(a) Use of walls, window frames, etc.
		Score: 5
		(a) Cork carpet set in neat frame.
		(b) Minimum size, 900 square inches.
		(c) Within reach of children.

¹ The word "same" means that the same standards apply as are outlined in column 1 under the same letter or figure.

THE STANDARDS—Continued

<p>12. (a) Desks Score: 40 (1) Single desks. (2) 5 sizes except in small schools. Judge this factor by whether there are enough sizes to provide adequately for proper seating of all children.¹</p> <p>(b) Teacher's desk Score: 10 (1) Well constructed, attractive, with 2 or more drawers fitted with locks. (2) Substantial office chair.</p>	<p>Score: 15 (1) Double, non-adjustable desks. (2) Same.</p> <p>Score: 5 (1) Table with single drawer. (2) Straight-backed chair of kitchen type.</p>	<p>Score: 10 (1) Movable chair-desks. (2) Same.</p> <p>Score: 5 (1) Roll top or exceptionally good desk. (2) Swivel chair.</p>
<p>13. Seating arrangements Score: 25 (a) On long axis of room; so faced that light comes from left if the windows are on one side only.</p> <p>(b) At least 18 inches between rows with at least 30 inches between seats and walls.</p> <p>(c) So far as possible rows should be made up of seats of same size.</p> <p>(d) Desk set at such distance from seat that pupil may work while sitting in an upright position. In general, desk should overlap seat by about two inches.</p>	<p>Score: 10 (a) On short axis of room. (b) Same.</p> <p>Score: 5 (c) Rows made up of seats of different size. (d) Same.</p>	<p>Score: 5 (a) On long axis of room so faced that light comes from left if the windows are on one side only. (b) 20 inches between rows; 36 inches between seats and blackboards; 24 inches between seats and window wall. (c) So far as possible rows made up of seats of same size. (d) Same.</p>
<p>14. Closet Score: 15 (a) Cabinet with door for various kinds of teaching supplies.</p>	<p>Score: 5 (a) Open shelves.</p>	<p>Score: 5 (a) Closet with door and shelves.</p>
<p>15. Clock Score: 5 (a) Small clock on teacher's desk.</p>	<p>Score: 0 (a) Teacher's watch.</p>	<p>Score: 5 (a) Wall clock.</p>
<p>16. Fuel room Score: 20 (a) Outside fuel shed; well lighted; substantial structure; painted to match school building, or (b) Cellar under building; well lighted; thoroughly dry.</p>	<p>Score: 10 (a) Use of shed connected with school building for fuel, store and wash room combined, the fuel being piled in open bins.</p>	<p>Score: 5 (a) Room at least 6 x 8, located near stove with provision for storing both fuel and kindling. (b) Lighted; ceiled side walls and ceiling. (c) Well fitting door effectively separating fuel room from class room.</p>

¹ The seat should be of such height as will permit the pupil's feet to rest squarely on the floor, and the desk should be so placed that he can write easily while sitting upright.

THE STANDARDS—Continued

<p>17. Cloak room Score: 25 (a) Sanitary wardrobes within the class room or single cloak room (b) Wall space per pupil at least 8 inches with hooks adjusted to size of children. (c) So located as to be under direct supervision of teacher.</p>	<p>Score: 5 (a) Hooks on class room walls.</p>	<p>Score: 10 (a) Separate cloak rooms for boys and girls, heated, ventilated and lighted. (b) Wall space per pupil at least 8 inches with hooks adjusted to size of children. (c) Same.</p>
<p>18. Work room</p>		<p>Score: 20 (a) Size at least 12×10 feet. (b) Opening from class room so as to be under supervision of teacher. (c) Well lighted. (d) Equipped with benches, tools, shelves and cabinets needed for manual training, agriculture, cooking, sewing, or such similar practical subjects as are taught.</p>
<p>19. Store room Score: 15 (a) Compartment (e. g., in cloak room) for broom, mop, dustpan, etc. (b) Sufficiently large to care for all materials (except teaching supplies) needed for building.</p>	<p>Score: 0 (a) Use of class room, cloak room, vestibule, or fuel room for this purpose.</p>	<p>Score: 5 (a) Closet. (b) Sufficiently large to care for all materials (except teaching supplies) needed for building.</p>
<p>20. Library Score: 20 (a) Bookcase with glass doors.</p>	<p>Score: 5 (a) Open book shelves.</p>	<p>Score: 15 (a) Alcove with bookcase or built-in bookshelves having glass doors. (b) Heated, well lighted. (c) Table and chairs. (d) Separated from class room by curtain or screen.</p>
<p>21. Teacher's room</p>		<p>Score: 10 (a) Room opening off class room; heated and well lighted. (b) Size at least 50 square feet. (c) Equipped with comfortable chair and cot.</p>

THE STANDARDS—Continued

22. <i>Playroom</i>		Score: 20 (a) Room in basement; substantial floor; furnace separated by fire-resisting walls; sufficient light; ceiling at least 8 feet high, or (b) Where movable chairs are provided for the class room, it may be used for playroom.
23. <i>Neighborhood room</i>		Score: 25 (a) Use of basement class room (where seated with movable chairs) or other room if folding chairs are provided.
24. <i>Heat and ventilation</i> Score: 30 (a) Type: (1) Jacketed stove. (b) Adequacy: Score: 30 (1) Maintain heat at 68° in every part of room and supply 30 cubic feet of air per pupil per minute. These indicated by: (a) Grate area of at least 210 square inches for room containing 8,000 cubic feet or less. (b) Fresh air intakes of at least 175 square inches for room containing 8,000 cubic feet or less. (c) Foul air hue of at least 240 square inches for room containing 8,000 cubic feet or less. (c) Heat control: Score: 10 (1) Thermometer.	Score: 15 (a) Type: (1) Unjacketed stove; window ventilation without window boards.	Score: 15 (a) Type: (1) Furnace with provision for gravity exhaust of bad air.
25. <i>Fire extinguisher</i>		Score: 10 (a) Hand fire extinguisher.
26. <i>Cleaning system</i> Score: 20 (a) Sweeping with floor brush or broom and sweeping compound or well-oiled floor. (b) Dusting with oiled cloth.	Score: 5 (a) Dry sweeping. (b) Dusting with dry duster or dry cloth.	Score: 10 (a) Vacuum sweeper.

THE STANDARDS—Continued

<p>27. Water supply Score: 25</p> <p>(a) Source:</p> <ul style="list-style-type: none"> (1) Well on school grounds or within 200 yards of school-house. (2) Located at least 100 feet from nearest barn, out-house or other possible source of contamination; slope away from well. (3) Covered with concrete platform resting on concrete wall sunk at least two feet in ground. (4) Analysis of water at least once each year. <p>(b) Drinking facilities: Score: 20</p> <ul style="list-style-type: none"> (1) Closed water jar with faucet. (2) Individual drinking cups with closed cabinet for keeping them; or paper cups. <p>(c) Washing facilities: Score: 15</p> <ul style="list-style-type: none"> (1) Wash basin at proper height for children; in warm room. (2) Soap. (3) Mirror. (4) Individual towels or paper towels. 	<p>Score 10</p> <p>(a) Source:</p> <ul style="list-style-type: none"> (1) Well about quarter of mile away. (2) Same. (3) Same. <p>(b) Drinking facilities: Score: 5</p> <ul style="list-style-type: none"> (1) Open jar or pail. (2) Same. <p>(c) Washing facilities: Score: 5</p> <ul style="list-style-type: none"> (1) Wash basin in room used as combined vestibule, fuel room, etc. (2) Same. (3) Mirror. (4) Common towel. 	<p>Score: 10</p> <p>(a) Source:</p> <ul style="list-style-type: none"> (1) Community or neighbor's water system. (2) Adequately protected against freezing. <p>(b) Drinking facilities: Score: 10</p> <ul style="list-style-type: none"> (1) Sanitary bubbling fountain. <p>(c) Washing facilities: Score: 5</p> <ul style="list-style-type: none"> (1) Porcelain bowl with drain. (2) Liquid soap in automatic container. (3) Mirror. (4) Individual towels or paper towels.
<p>28. Artificial lighting Score: 10</p> <p>(a) Oil lamps.</p> <p>(b) Enough in class room to permit reading without strain; at least one light in each cloak room, inside toilet room, etc.</p>		<p>Score: 10</p> <p>(a) Electricity or gas.</p> <p>(b) Same.</p>
<p>29. Toilets Score: 20</p> <p>(a) Kind:</p> <ul style="list-style-type: none"> (1) Chemical system, or (2) Septic tank system. <p>(b) Placement: Score: 10</p> <ul style="list-style-type: none"> (1) In rooms, conveniently located attached to the building. (2) Boys' and girls' toilets completely separated even as to approaches. <p>(c) Condition: Score: 20</p> <ul style="list-style-type: none"> (1) Lighted and well ventilated. (2) Walls and ceiling constructed and finished as other rooms in building. (3) No markings. <p>(d) Adequacy: Score: 15</p> <ul style="list-style-type: none"> (1) One seat for each twenty-five pupils of each sex. 	<p>Score: 10</p> <p>(a) Kind:</p> <ul style="list-style-type: none"> (1) Pit privy, one for each sex. <p>(b) Placement: Score: 10</p> <ul style="list-style-type: none"> (1) Toward back of school grounds. (2) Separated from each other by at least 50 feet. (3) Effectively scrubbed. 	<p>Score: 10</p> <p>(a) Kind:</p> <ul style="list-style-type: none"> (1) Flush system. <p>(d) Adequacy: Score: 5</p> <ul style="list-style-type: none"> (1) One seat for each 15 pupils of each sex.

THE STANDARDS—Continued

30. Telephone		Score: 10
31. Bell Score: 5 (a) Hand bell.		Score: 5 (a) Large bell.
32. First aid outfit Score: 10 (a) Cabinet with bandages, ointment, adhesive plaster, iodine, etc.		
33. Mail box Score: 5 (a) Water proof. (b) Large enough for bulletins, etc., addressed to school. (c) Located on mail route at point most convenient to school.		
34. Flag and pole Score: 10 (a) On building. (b) Equipped with rope and pulley. (c) Flag at least 3 x 5 feet.		Score: 5 (a) Metal or wood pole in front yard higher than building. (b) Same. (c) Same.
35. Vestibule Score: 20 (a) Size at least 6 x 8 feet. (b) Substantial floor; inside walls of matched lumber; outside walls same as building proper. (c) Well lighted. The vestibule may be dispensed with when adequate protection from storms is provided by means of a porch, use of weather strips on door or location of building.		
36. Material of construction Score: 25 (a) First quality lumber.	Score: 5 (a) Logs or poor quality lumber.	Score: 10 (a) Brick, concrete or tile.
37. Foundation Score: 15 (a) Stone (or equivalent local material). (b) Height: 18 to 30 inches.		Score: 5 (a) Brick, tile or concrete. (b) Height: 18 to 30 inches.
38. Roof Score: 20 (a) Shingle roof.	Score: 5 (a) Paper roof.	Score: 10 (a) Slate roof.
39. Condition of repair Score: 30 (a) Paint in good state of preservation. (b) No broken window-panes, steps, boards on siding, etc. (c) No markings on buildings.		
40. Location on grounds Score: 20 (a) Building so located that (1) The effectiveness of the grounds for play purposes is not interfered with, e. g., unless grounds are considerably larger than the minimum given in Item 43, the building should be toward one side and the front of the grounds. (2) It looks well; not too near the road nor yet too far back on the grounds.		

THE STANDARDS—Continued

41. Orientation ¹	Score: 25 (a) Class room placed so as to (1) Receive direct sunlight some time during the day (not north). (2) Avoid direct sunlight during entire day (not south). (b) Factors to be considered: Whether mornings are foggy (favoring western exposure); whether high hills or trees affect lighting; whether mornings are less cloudy than afternoons (favoring eastern exposure); direction of prevailing winter winds; attractive outlook.	Score: 10 (a) Northern or southern exposure.	Score: 5 (a) General east or west exposure with angle of 10-15 degrees toward south.
42. Architectural appearance			Score: 10 (a) Cottage type.
43. Size of grounds	Score: 25 (a) About 160 square rods—sufficient to provide: (1) Site for building. (2) Small lawn with a few trees and some shrubbery. (3) Playground providing for games and apparatus indicated in Item 49. Where conditions make necessary a barn or shed for horses or cars, more space must be provided.	Score: 5 (a) About 20 square rods.	Score: 15 (a) 320 square rods.
44. Shape of grounds	Score: 10 (a) Of such shape that there is little waste space. In general a rectangular form is most desirable.		
45. Slope and drainage	Score: 25 (a) Natural elevation with grounds sloping away from building. (b) Grounds well drained. (c) Quick-drying, fertile soil.		
46. Condition	Score: 20 (a) No ashes or other refuse. (b) No weeds.		Score: 15 (a) Lawn mowed; trees and shrubbery trimmed; flowers.
47. Fencing	Score: 5 (a) Board or woven-wire field fence. (b) About 3½ feet high.	Score: 0 (a) Barbed wire. (b) Same.	Score: 5 (a) Heavy woven wire. (b) Same.
48. Walks	Score: 10 (a) Gravel or cinder walks, well-drained, from road to building, building to well, etc., or (b) Board walks in good condition.		Score: 5 (a) Cement walks.

¹ The orientation of a building is the direction from which light enters the class room, not the direction which the building faces.

THE STANDARDS—Continued

49. Playground apparatus Score: 25 (a) At least the following or equivalent apparatus: swing; sand pile; teeter board; horizontal bar; volley ball and net; baseball and bat. Where school has not over 10 pupils less may be accepted.		Score: 10 (a) In addition to minimum: giant stride, basket ball and standards; slide.
50. Environment Score: 25 (a) Freedom from nuisances such as odors from barnyards, etc. (b) Freedom from dangers, such as railroads, high cliffs, dangerous bodies of water, etc. (c) A reasonably attractive view considering the opportunities of the vicinity in this respect.		
51. Accessibility Score: 25 (a) Located near main highway. (b) As near center of district as possible but not over $1\frac{1}{2}$ miles from farthest home except where transportation at public expense is provided.		

MODIFICATIONS FOR TWO-TEACHER BUILDINGS

16. Fuel room Score: 20 (a) Fuel room in basement located near furnace.	Score: 10 (a) Outside fuel shed; well lighted; substantial structure; painted to match school building.
24. Heat and ventilation (a) Type: Score: 30 (1) Furnace with provision for gravity exhaust of impure air. (b) Adequacy: Score: 30 (1) Maintain heat at 68° in every part of the room.	(a) Type: Score: 20 (1) Jacketed stove with provision for the bringing in of fresh air and the carrying out of impure air.
49. Playground apparatus Score: 25 (a) At least the following or the equivalent apparatus: sand pile; 2 swings; 2 teeter boards; horizontal bars; volley ball and net; baseball and bat.	

2. A GENERAL MEASURE OF THESE BUILDINGS

Table 1 shows the distribution of the one-teacher schools according to essential and additional credit. As may be seen, the median score is $608 + 14$, that is, an essential standard score of 608 with an additional score of 14. These facts make it clear that the one-teacher school building in New York is far short of meeting

TABLE I.—ESSENTIAL STANDARD AND ADDITIONAL CREDIT FOR ONE-TEACHER BUILDINGS

Essential Standard Credit	Additional Credit										Total					
	0	1-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149
1,000+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
950-999	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
900-949	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
850-899	2	..	1	..	..	2	5	2	1	2	1	1	1	1	1	4
800-849	..	1	4	6	5	9	5	5	2	3	1	1	1	1	1	18
750-799	3	6	15	15	11	15	4	3	1	2	..	..	..	..	..	42
700-749	2	8	31	35	21	10	3	1	..	..	..	..	..	..	..	75
650-699	19	26	80	49	20	8	..	2	1	..	..	..	..	..	..	112
600-649	29	51	131	51	15	7	2	..	..	..	..	..	..	..	..	207
550-599	49	65	137	36	12	1	2	..	..	..	..	..	..	..	..	286
500-549	67	54	78	17	4	..	..	..	..	..	..	..	..	..	..	302
450-499	48	20	21	3	2	..	..	..	..	..	..	..	..	..	..	220
400-449	30	9	15	3	1	..	..	..	..	..	..	..	..	..	..	94
350-399	8	1	4	..	..	..	..	..	..	..	..	..	..	..	..	58
300-349	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13
250-299	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
200-249	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
150-199	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Under 150	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	262	243	517	215	91	52	21	14	6	5	6	2	1	2	0	1,438

$Q_1 = 543 + 4$. Median = 604 + 14. This median score means that the essential standard credit amounts to 604 while the additional credit is 14. $Q_3 = 674 + 23$.

standards that may be set as reasonable, and suggest a problem that should challenge the best effort of rural communities. Not only are the scores low in general but they show a remarkable degree of uniformity. Thus one-half the buildings are found between $543 + 4$ and $674 + 23$, a difference of only $131 + 19$ points. Only .35 of 1 percent have a score of 900 or over and only 1.4 percent a score of under 400. It is of interest and significance to see how little the schools are entitled to in the way of additional credit. A school entirely modern as to construction and facilities provided would readily secure additional credit of from 275 to 300 points.

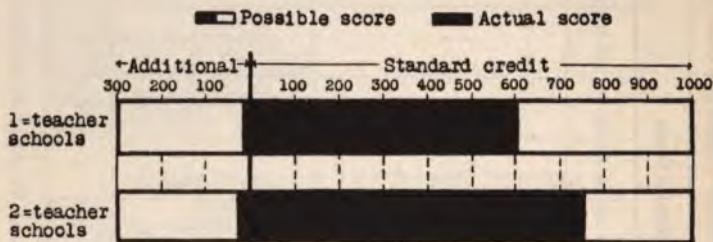


Diagram 2.—Median scores for one- and two-teacher buildings. The essential standard score is indicated at the right of the heavy vertical line; the additional score to the left of this line

The two-teacher schools (Table 2) are better, though they, too, fall considerably short of the essential standards. The median score is $755 + 29$, an improvement of $150 + 15$, not counting certain higher standards required of the two-teacher buildings on a few items (see p. 36). The middle 50 percent of these schools is spread over a somewhat larger section of the scale, *i. e.*, $166 + 39$ as compared with $131 + 19$ in the one-teacher buildings. There is a larger percentage of buildings with a score of 900 or better—9.1 percent. Here again the additional credit is small.

3. PROBLEMS IN THE USE OF THESE GENERAL MEASURES

In the interpretation of the scores given above two practical questions are likely to be raised. (1) What score should be set as the index of a reasonably satisfactory building? (2) What score

TABLE 2.—ESSENTIAL STANDARD AND ADDITIONAL CREDIT FOR TWO-TEACHER BUILDINGS

Essential Standard Credit	Additional Credit												Total				
	0-19	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	150-159	
1,000+	
900-949	
850-809	
800-849	
750-799	1	1	4	3	1	3	2	2	2	2	1	1	1	1	1	2	7
700-749	..	1	1	2	5	3	2	1	1	1	1	1	1	1	1	1	11
650-699	..	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	13
600-649	..	3	4	1	1	1	1	1	1	1	1	1	1	1	1	1	14
550-599	..	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8
500-549	4	1	1	1	1	1	1	1	1	1	1	1	1	1	5
450-499	4	1	1	1	1	1	1	1	1	1	1	1	1	1
400-449	4	1	1	1	1	1	1	1	1	1	1	1	..
350-399	4	1	1	1	1	1	1	1	1	1	1	..
300-349	4	1	1	1	1	1	1	1	1	1	..
250-299	4	1	1	1	1	1	1	1	1	..
200-249	4	1	1	1	1	1	1	1	..
150-199	4	1	1	1	1	1	1	..
Under 150	4	1	1	1	1	1	..
Total	1	7	17	15	7	7	7	2	1	1	1	1	1	2	1	2	77

$Q_1 = 676 + 16$. Median = 735 + 29. This median score means that the essential standard credit amounts to 735, while the additional credit is 29. $Q_3 = 842 + 55$.

should be used as the standard for condemning buildings as provided by law?

(1) In connection with the first question it should be recalled that the *essential* standards were frankly planned so as to require only what is both desirable and attainable. It follows, then, that the goal of every community should be the 1,000 points of a perfect essential standard score. The progressive community will have its efforts shown by the additional points that it receives.

(2) In a later section (II, C) it will be pointed out that one of the causes for the present situation is undoubtedly the indefiniteness of the law that provides for condemnation by the district superintendent. It is there suggested that the least that the state ought to accept is a total of 610 credits, these to be certain specified items (stated in II, C) without which the education of children is likely to suffer.

4. ARE THE TYPES OF FACILITIES PROVIDED IN ACCORDANCE WITH MODERN HYGIENIC REQUIREMENTS?

The scores given above show that in general New York one- and two-teacher buildings fall far short of meeting those requirements that now are rather commonly accepted for modern school buildings of this size. In this and the following two sections will be presented more detailed evidence on this matter. It will be noticed that both for economy of space and effectiveness of comparison data regarding one- and two-teacher schools are presented together. The percentage of cases in which there were no data is given in order that the reader may form a conclusion as to the completeness of the data from which the percentages are computed.

(a) AMOUNT AND QUALITY OF NATURAL LIGHTING.—One of the first requirements for a school building is a sufficient amount of properly distributed light. The commonly accepted standard for such a climate as that of New York is that the glass area of the windows should be from one-fifth to one-fourth that of the floor area. The standard used in this survey was that the proportion should be at least one-fifth, or, where there is considerable shade, one-fourth. Table 3 shows how far short of this standard many schools fall.

TABLE 3.—PROPORTION THAT GLASS AREA IS OF FLOOR SPACE

Proportion	Percentage of All Schools Studied ¹	
	One Teacher	Two Teachers ²
1:2.....	1.0%	2.9%
1:3.....	1.3	6.4
1:4.....	5.1	13.7
1:5.....	11.2	22.3
1:6.....	14.1	16.5
1:7.....	18.6	5.8
1:8.....	14.0	10.1
1:9.....	13.0	10.8
1:10.....	10.9	2.2
1:11.....	4.5	3.6
1:12.....	2.9	4.3
1:13.....	1.5	.7
1:14.....	.9	.7
1:15.....	.5	..
1:16.....	.3	..
1:17.....	.1	..
1:18.....	.1	..

The median one-teacher school falls in the 1:7 group; the median two-teacher school, in the 1:6 group. The extremely low proportions found in both types of school cannot be excused no

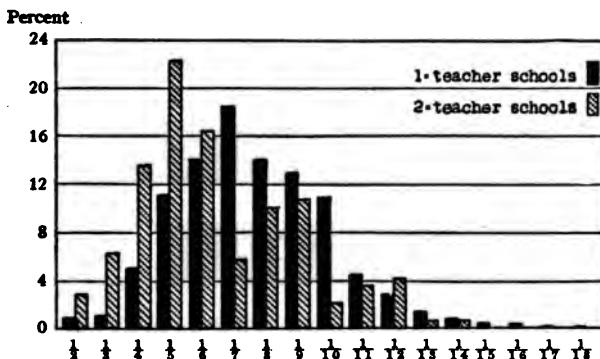


Diagram 3.—Proportion that glass area is of floor space in one- and two-teacher schools. The standard is at least 1 : 5

matter what the cost may be to community or state for making the necessary improvements.

¹ The reader will recall that there were 1,438 one-teacher and 77 two-teacher schools.

² In this and similar cases, where conditions may vary for each of the two class rooms, each room is counted as a unit.

Not only is the glass area too small in the majority of schools, but the shades used are commonly such as to reduce the amount of light that might otherwise be available. Thus Table 4 shows that

TABLE 4.—COLOR AND TYPE OF SHADES

	Percentage of All Schools Studied	
	One Teacher	Two Teachers
I. Color:		
Translucent.....	14.0%	29.6%
Opaque.....	86.0	70.4
II. Type:		
None.....	7.1%	6.7%
Adjustable.....	0.0	2.6
Double roller.....	.6	6.7
Single roller from bottom.....	.6	6.7
Single roller from center.....	.1	0.0
Single roller from top.....	91.1	77.3
Two or more kinds.....	.5	0.0

86 percent of the one-teacher and 70.4 percent of the two-teacher schools have opaque shades and that it is almost universal to find a type of shade that cannot be moved from one part of the window as the angle from which the sun's rays come changes. The single roller fastened at the top is reasonably satisfactory when the sun is high, and the direct rays may be eliminated by shading a small

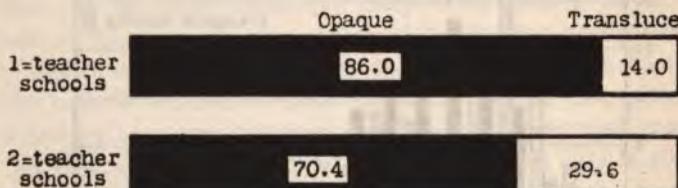


Diagram 4.—Translucency of shades in one- and two-teacher schools as indicated by the color

section of the upper part of the window. It is highly unsatisfactory when the sun is low, for the reason that the shade must be pulled down to near the bottom of the window to shut out the rays. This, of course, reduces greatly the amount of light that enters the schoolroom. The situation is made still worse by the frequency with which broken shade rollers are found. It is not uncommon to find half the rollers in a building in such condition that either the

shades cannot be used at all or they remain from one-fourth to one-half the way down the window throughout the day.

The quality of the light is also of considerable importance. Modern requirements call for lighting from one side only—the left. This prevents the casting of shadows by shoulders, hand, or pencil when considerable light comes from the pupil's rear or right. Lighting from both left and right tends to produce a reflection that is irritating to the eyes. Light in the rear is further harmful because the teacher must face it a good part of the day, while light in the front, where all the pupils must face it constantly, is even more disastrous. Since most of New York's smaller school buildings were erected at a time when such facts were not given great weight, it is to be expected that conditions will not be satisfactory. Table 5 gives the details.

TABLE 5.—WINDOW PLACEMENT

Windows Placed	Percentage of All Schools Studied	
	One Teacher	Two Teachers
On left only.....	3.4%	23.3%
On right only.....	0.0	0.0
On left and rear.....	8.7	39.4
On left and right.....	21.6	8.4
On right and rear.....	.4	2.8
On left, right and rear.....	50.5	21.1
On left, right and front.....	3.6	0.0
On left, rear, and front.....	1.1	4.3
On right, rear, and front.....	.2	.7
On left, rear, right and front.....	10.3	0.0
No data.....	.2	0.0

Only 3.4 percent of the one-teacher schools meet the standard. The two-teacher schools are better, having 23.3 percent lighted from the left only. The next most satisfactory type of window placement, left and rear, exists in 8.7 percent and 39.4 percent of the cases respectively. A further study of the table will make it clear that the window placement is far better in the two-teacher schools.

A situation affecting both the amount and the quality of the lighting is the color scheme. Dark colors are to be avoided because they absorb the light, while pure white causes undue reflection. The standard used in this study—"some light reflecting color, pleasing in its general effect"—is certainly none too high, yet as Table 29, item 8, shows, only 32 percent of the one-teacher schools

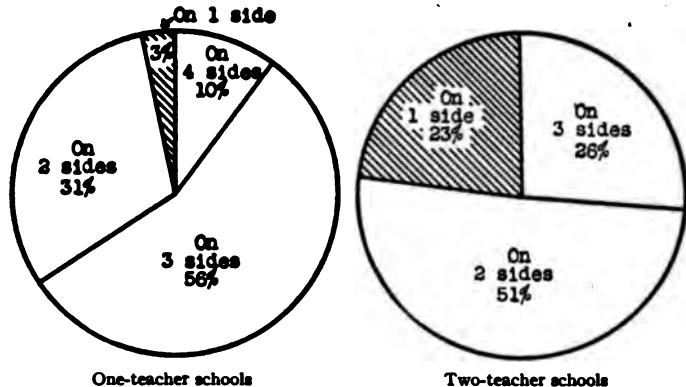


Diagram 5.—Window placement in one- and two-teacher schools. Light from one side is the standard

receive 81 percent or more of complete essential standard credit. Only 1 percent approximate the ideal as to color scheme. (See Table 30.)

(b) HEATING AND VENTILATION.—The old-fashioned unjacketed stove, without facilities for distributing the heat, for receiving regularly a supply of fresh air, or for discharging the foul air, persists in New York state. However, 71.3 percent of the two-teacher schools have either a furnace or a jacketed stove.

Kind	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Furnace.....	5.1%	56.0%
Jacketed stove.....	8.7	15.3
Gas heater.....	.2	0.0
Unjacketed stove.....	85.2	26.0
No data.....	.8	2.7

As a result of the type of apparatus used, a large proportion of the schools depend upon window and door ventilation. Of the one-teacher schools, 83.3 percent have no fresh air intake and 80.3 percent have no foul air outlet. Of the two-teacher schools, 22 percent have no intake and 20 percent no outlet. Only 31 percent of the one-teacher schools have that necessary means for securing an impersonal test of the amount and the distribution of heat—a

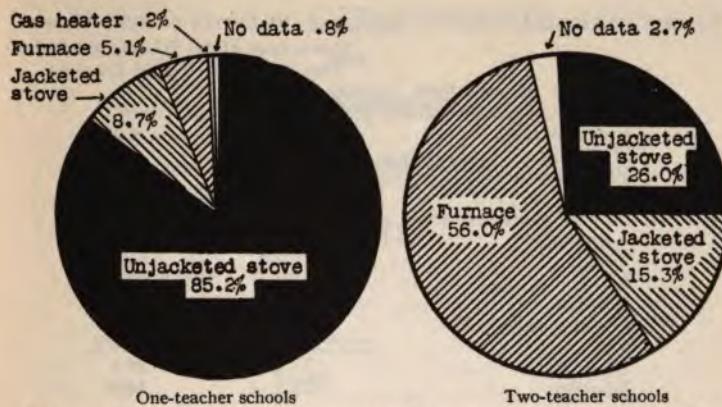


Diagram 6.—Types of heating apparatus in one- and two-teacher schools

thermometer. The situation is much better in the two-teacher schools.

TABLE 7.—NUMBER OF THERMOMETERS IN SCHOOLS

	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Yes.....	31.0%	69.3%
No.....	69.0	30.7

(c) WATER SUPPLY AND DRINKING AND WASHING FACILITIES.—A supply of pure water with means for preventing contagion through proper provision for drinking and washing is a necessity. A neighbor's well is the common source. There is no objection to this if the water is pure and if it is not necessary to carry it too far. The

TABLE 8.—SOURCE OF WATER SUPPLY FOR SCHOOLS

Source	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Water system.....	0.3%	8.0%
Well on grounds.....	11.6	57.3
Neighbor's well under 200 yds.	43.5	22.7
Neighbor's well 200 yds. or over....	30.8	12.0
Spring.....	12.1	0.0
Brook.....	.2	0.0
No data.....	1.5	0.0

water is seldom analyzed so that the test of purity is a practical one—whether or not illness results. It is regrettable that the more economical test of analysis is not followed more frequently, especially in view of the relatively large number of open springs that

TABLE 9.—CERTAIN CONDITIONS AFFECTING THE SUPPLY OF PURE WATER
 Percentage of All Schools Studied
 One Teacher Two Teachers

	One Teacher	Two Teachers
I. Distance of well from possible source of contamination		
Under 50 feet	13.5%	6.7%
51-99 feet	14.5	4.0
100 feet or over	61.5	73.3
No data	10.5	16.0
II. Is well protected from surface drainage?		
Yes	77.2%	75.0%
No	18.9	13.9
No data	3.9	11.1
III. Is water analyzed?		
Yes	1.4%	5.4%
No	77.4	79.7
No data	21.2	14.9

are found in the state. Table 9 gives significant data bearing upon the question of contamination of water at its source. As to whether or not 100 feet from a possible source of contamination

TABLE 10.—MEANS FOR PREVENTING CONTAGION THROUGH DRINKING OR WASHING

	One Teacher	Two Teachers
I. Facilities for drinking		
Fountain	5.6%	24.3%
Closed jar	41.2	39.8
Covered pail	3.1	0.0
Open jar or pail	42.8	12.8
Go to well	2.1	14.1
No data	2.1	9.0
None	3.1	0.0
II. Drinking cups		
Paper cups	1.8%	4.1%
Individual cups	28.8	21.9
Either of these	49.9	46.6
Neither of these	16.6	15.1
No data	2.9	12.3
III. Are individual cups adequately protected when not in use?		
Yes	26.7%	29.0%
No	68.2	49.3
No data	5.1	21.7
IV. Towels		
Paper	5.6%	10.7%
Individual	3.6	0.0
Either of these	17.8	24.0
Neither of these	61.4	64.0
No data	6.9	1.3
None	4.7	0.0

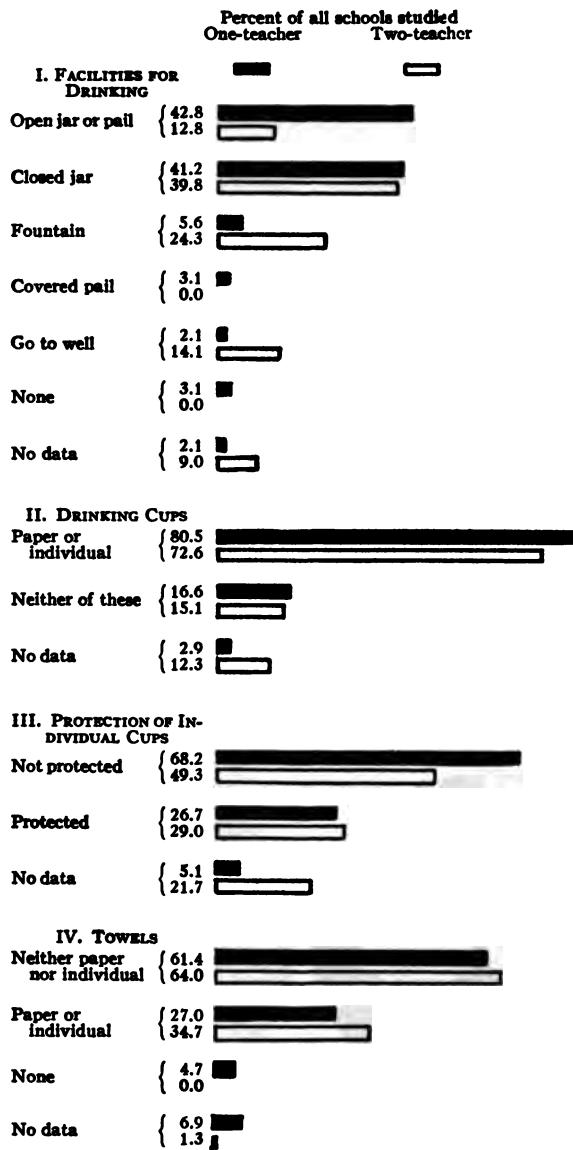


Diagram 7.—Drinking facilities and towels in one- and two-teacher schools

insures protection depends upon the nature of the soil and the slope of the ground, but it offers at least a tentative standard.

The open water-pail, the common cup, and the common towel are still in evidence. Either paper cups or individual cups are found in a commendable percentage of schools, but unfortunately the good effect of this is offset by lack of proper protection for individual cups when not in use. A simple cabinet with a definite place assigned each pupil would make it unnecessary for cups to be kept upon or in the desks where dust can settle upon them. Most satisfactory of all is the water jar with attached bubbling fountain. The better grades of these can be secured for around \$20 and in time will be considered as a necessary part of the schoolroom equipment. It is astonishing that paper towels are not more commonly used when one considers the extent to which they reduce the labor of laundering and insure the control of contagion from this source. The expenditure of the eight or ten dollars necessary to provide these towels for a school of 10 pupils is a genuine economy.

TABLE 11.—IS FLOOR OILED?

	Percentage of All Schools Studied	
	One Teacher	Two Teachers
No.....	58.0%	32.0%
Yes—where dry sweeping is used.....	36.5	61.1
Yes—where compound is used.....	1.6	6.9
No data.....	3.9	0.0

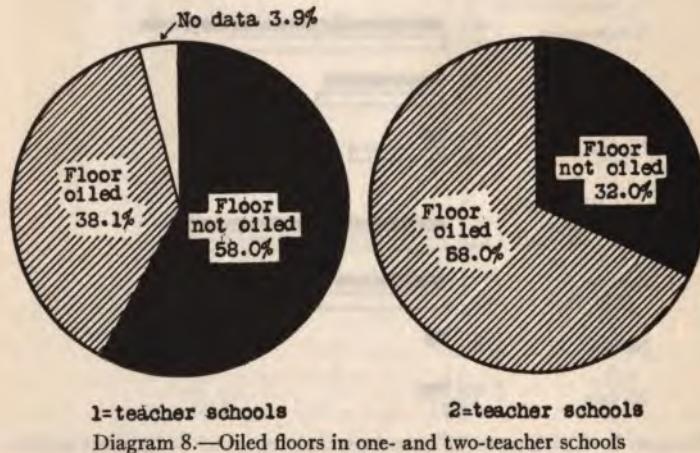


Diagram 8.—Oiled floors in one- and two-teacher schools

(d) CLEANING SYSTEM.—Unhygienic methods of cleaning the schoolroom are common. The oiled floor is found in only 38.1 percent of the one-teacher and in 68 percent of the two-teacher schools. Dry sweeping and dry dusting are still the prevailing methods.

TABLE 12.—METHODS OF SWEEPING AND DUSTING

Percentage of All Schools Studied
One Teacher Two Teachers

I. Sweeping		
Compound.....	4.3%	10.8%
Dry.....	95.0	78.4
No data.....	.7	10.8
II. Dusting		
Oiled cloth.....	9.5%	30.7%
Damp cloth.....	10.6	9.3
Dry cloth.....	77.7	54.7
None.....	1.4	0.0
No data.....	.8	5.3

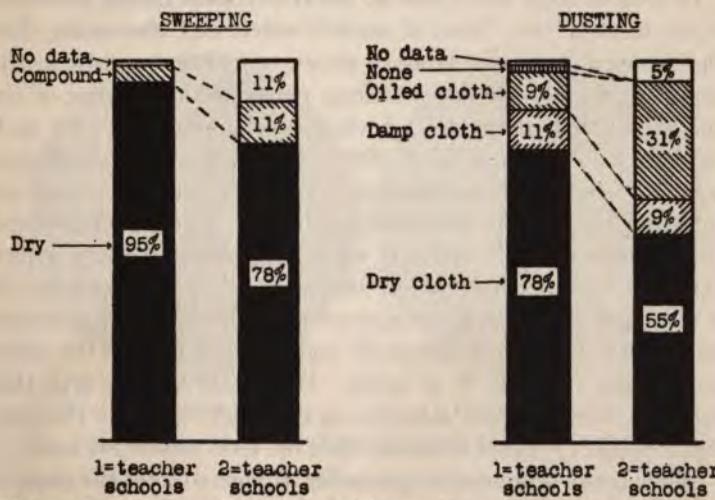


Diagram 9.—Methods of sweeping and dusting in one- and two-teacher schools

(e) FIRST AID OUTFIT.—Table 13 shows that only 10.3 percent of one-teacher and 12.2 percent of two-teacher schools have a first aid outfit of any kind. One hundred and eleven of the 146 one-teacher schools having these outfits are found in 6 supervisory districts, indicating what may be done through leadership.

The value of such an outfit for giving immediate attention to cuts, bruises, simple illnesses, etc., certainly justifies the expenditure of the three or four dollars involved.

TABLE 13.—NUMBER OF SCHOOLS HAVING A FIRST AID OUTFIT

	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Yes.....	10.3%	12.2%
No.....	89.7	87.8

(f) TOILETS.—As a minimum standard for outdoor toilets the statutes require that at least two suitable and convenient water closets, entirely separated from each other and having separate means of access with the approaches separated by a substantial close fence not less than seven feet in height, must be provided in each school district.

In 1916 an order was issued by the Department calling attention to the unsatisfactory state of outdoor toilets and announcing that an approved system of sanitary closets would be required in the approval of plans for new buildings or for the remodeling of old buildings; that all public schools must be provided with such facilities before September 1, 1918, except where the schoolhouse is unfit for use and consolidation is to be expected or a contract entered into or where the district valuation is below \$20,000 and the attendance small; and that where it becomes necessary to provide new toilet facilities before that date, such facilities must be of the approved type. Four types are now included in the approved list: flush; dry closet; chemical; and a special form of the septic tank known as the L. R. S. toilet. The chemical is the type that has been receiving most attention in the small schools of the state and it is this type that is meant when the term *sanitary* is used.

While many communities proceeded at once to meet the requirement, there were a large number that did not. Some declined or neglected to do so because they considered such an order an undue exercise of state authority; some failed to see the need of improved conditions; some objected to the forms of toilets prescribed; some claimed financial inability on one ground or another even though districts under \$20,000 valuation were not required to make such improvements. Whatever the reason assigned, it is clear that back

of it all was the failure of patrons to realize the necessity for remedying existing conditions. Had the facts regarding conditions such as the present writer has seen—unclean, badly marked, poorly ventilated and lighted, with inadequate means of separating the sexes—been presented to parents, they would certainly have *demanded* improvement.

The outdoor toilet still predominates in the one-teacher schools, as Table 14 indicates. The flush toilet is, of course, not feasible in

TABLE 14.—KINDS OF TOILETS

	Percentages of All Schools Studied	
	One Teacher	Two Teachers
Flush.....	0.3%	12.3%
Sanitary.....	35.2	54.8
Outdoor.....	63.8	32.9
No data.....	.7	..

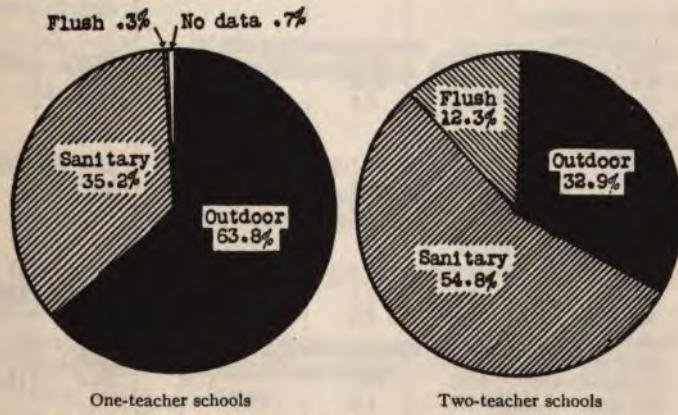


Diagram 10.—Kinds of toilets in one- and two-teacher schools

many schools in the open country because of the heavy expense for installing pressure tanks.

Is the sanitary toilet an improvement? There are at least eight important ends that are to be desired in any system of toilets: (1) Cleanliness; (2) control of the spread of disease through flies, etc.; (3) facilities that do not permit weather conditions to become a deterrent to the full use of those facilities; (4) freedom from de-

facement; (5) easy control by the teacher; (6) complete seclusion; (7) sufficient ventilation; (8) sufficient light.

Facts collected in the scoring of buildings throw light upon the effectiveness of attaining certain of these ends through different types of toilets. Thus Table 14A shows decidedly better conditions

TABLE 14A.—COMPARISON OF THE EFFECTIVENESS OF DIFFERENT TYPES OF TOILETS AS TO SECLUSION, LIGHTING, VENTILATION, AND GENERAL CONDITION

	Percentage of All Schools Studied					
	One Teacher			Two Teachers		
	Chemical	Outdoor	Flush	Chemical	Outdoor	Flush
1. Is there sufficient seclusion?						
Yes.....	93.2%	57.5%	100%	92.7%	69.6%	100%
No.....	5.2	40.4	..	2.4	30.4	..
No data.....	1.6	2.1	..	4.9	..	..
2. Are they well lighted?						
Yes.....	95.5%	29.7%	100%	100%	47.8%	100%
No.....	3.8	68.5	..	..	52.2	..
No data.....	.7	1.8	..	..	..	..
3. Are they well ventilated?						
Yes.....	91.2%	25.3%	100%	95.1%	43.5%	87.5%
No.....	7.8	72.7	..	4.9	56.5	12.5
No data.....	1.0	2.0	..	..	..	..
4. General condition						
Satisfactory ...	88.6%	25.7%	100%	88.0%	34.8%	87.5%
Unsatisfactory	10.2	73.3	..	12.0	65.2	12.5
No data.....	1.2	1.0	..	..	..	..

regarding seclusion, light, ventilation, and general condition where there are sanitary toilets. It is also clear that conditions are not perfect where this type is found.

The reason for the showing on seclusion, lighting, and ventilation is undoubtedly due in large part to the requirements that the state has set for the installation of the sanitary toilet. These are:

“1. The closet or toilet must be in a room attached to and made a part of the school building.

"2. The walls and ceiling of this room must be constructed and finished in like manner as other rooms of the building.

"3. In all cases the rooms must be well lighted and ventilated.

"4. Toilet rooms must be heated in all cases where it is practicable to do so.

"5. Before constructing sanitary closets, a simple sketch of the rooms and approaches and a description of the closet must be submitted to the State Department of Education for approval.

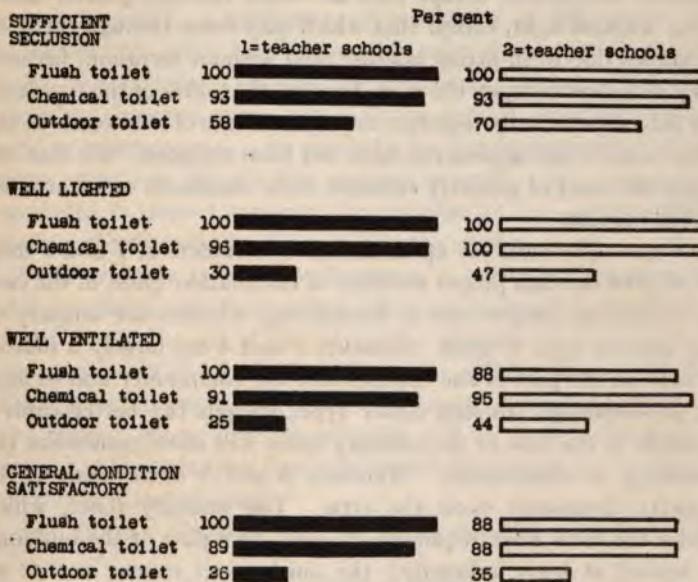


Diagram 11.—Effectiveness of different kinds of toilets in one- and two-teacher schools

"6. Provision must be made for the ventilation of receptacles by means of ventilators extending through the roof.

"7. There must be a thoroughly well-lighted, ventilated approach or anteroom leading to the closet from the schoolroom or common corridor or hallway of the building. If of sufficient size, the anteroom may serve also as coat room.

"8. All receptacles must be of a type to be emptied outside of

class rooms, recitation rooms, hallways and toilet rooms, and the construction must be such as to facilitate this process.

"9. The vaults must be tight so as to render the entrance of flies, mosquitoes and other insects absolutely impossible.

"10. Seats must be hinged and made to close automatically."

Similar results as to these three factors could be secured through the outdoor toilet if proper care were taken. As the facts show, however, it is far from unusual to find such toilets completely without ventilation, except such as comes through general diffusion; without light, except that which may come through the door or cracks due to ill-fitting boards; and without seclusion, because they face directly upon the road, because the toilets of the two sexes are placed practically together, or because some of the boards in the close fence of the approaches have not been replaced. We thus see again the need of properly enforced state standards or an aroused public opinion.

Of the eight ends set up as desirable, numbers 5, 7 and 8 may be secured through proper methods of installation (plus, in the case of ventilation, proper care in deodorizing) whether the sanitary or the outdoor type is used. Numbers 1 and 4 are largely a matter of care on the part of the children and the community and so may be accomplished through either type, though the better control possible in the case of the sanitary toilet will affect somewhat the tendency to defacement. Numbers 3 and 5 alone seem to be entirely dependent upon the type. The sanitary toilet, which under the New York requirements must be a part of the building, is heated at least indirectly; the outdoor, of course, not at all under ordinary conditions. No proof can be offered as to the extent to which ill health in later life is traceable to the reluctance on the part of children to use the toilet fully during bad weather, but it is probably considerable. It is clear, however, that the sanitary toilet, being within doors, is more fully under teacher control. Number 2 is secured partly through care and partly through type. The outdoor closet, when lime or similar material is regularly used, becomes less of a menace through the spread of disease, but it does not equal the properly cared for sanitary toilet in this respect.

In brief, then, the situation is this: Seclusion, light, and ventilation may be secured through either type of toilet, depending upon the plans of installation and, in the case of ventilation, upon the exercise of reasonable care. Comparison shows clearly superior conditions at present under the sanitary type due probably to specific requirements of the Department of Education. Analysis indicates decided advantages for the sanitary toilet through better control of the spread of disease, through better teacher control, and through the practical elimination of weather as a factor in the use of the toilet. Cleanliness and prevention of defacement may be secured by either type, depending upon the care and attention given the matter. In securing cleanliness the sanitary toilet probably demands more care. It cannot be neglected without serious consequences. Because of the chemicals used it is also more expensive, though this expense is small. If a person were employed to inspect and care for a number of the sanitary toilets, greater effectiveness would undoubtedly result.

Such evidence as is available seems to point to the superiority of the sanitary over the outdoor toilet, but it should be emphasized that it is not the use of any particular kind that is important but the attainment of certain desirable ends. The state of New York has a splendid opportunity to test, through actual operation, the two types. Progressive communities will be alert in securing the control of those factors that will most fully protect the health and morals of school children.

(g) PUPILS' DESKS.—Modern desks are the exception. The

TABLE 15.—TYPES OF PUPILS' DESKS

Type	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Movable chair-desk.....	0.1%	2.4%
Single adjustable.....	1.6	3.6
Single non-adjustable.....	32.9	44.6
Double non-adjustable.....	56.2	26.5
Home made.....	.3	0.0
Two kinds.....	8.7	16.9
Three kinds.....	.1	3.6
No data.....	.1	2.4

new movable chair-desk that permits informal grouping of pupils, and the use of the class room for other than regular instructional

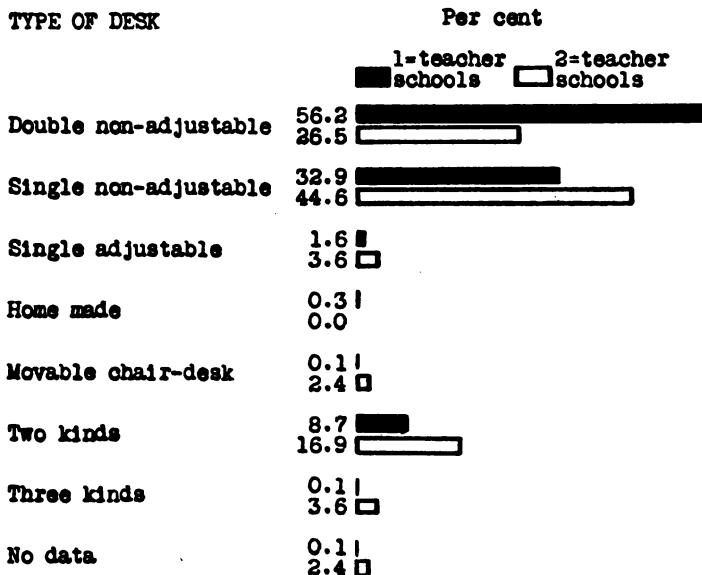


Diagram 12.—Types of pupils' desks in one- and two-teacher schools

TABLE 16.—ADJUSTMENT OF SEATS AND DESKS

Percentage of All Seats in School	Percentage of All Schools Studied					
	Seats Not Properly Adjusted		Desks Not Properly Adjusted		Distance Between Desk and Seat Incorrect	
	One Teacher	Two Teachers	One Teacher	Two Teachers	One Teacher	Two Teachers
0	32.6%	48.9%	32.5%	47.6%	27.9%	40.3%
1-9%	2.7	3.7	2.5	2.4	1.8	1.2
10-19	9.9	18.3	8.4	17.1	4.8	3.7
20-29	16.4	14.6	17.0	11.0	7.0	7.3
30-39	9.0	1.2	6.8	4.9	2.9	2.4
40-49	5.4	2.4	6.0	2.4	2.6	2.4
50-59	10.9	6.1	10.3	7.3	9.3	17.1
60-69	2.5	1.2	3.0	2.4	2.6	1.2
70-79	1.4	1.2	2.2	1.2	3.5	1.2
80-89	1.1	0.0	1.1	0.0	2.3	2.4
90-99	.2	0.0	.2	0.0	2.8	1.2
100	2.3	0.0	3.1	0.0	29.1	15.9
No data	5.6	2.4	6.9	3.7	3.4	3.7

TABLE 17.—KIND OF BLACKBOARD

Kind	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Slate.....	34.9%	57.6%
Composition.....	11.6	1.4
Painted boards.....	34.0	11.1
Painted plaster.....	1.8	1.4
All others.....	1.0	13.2
Combinations		
Slate and composition.....	3.0%	2.8%
Slate and boards.....	6.3	7.6
Slate and plaster.....	.4	0.0
Composition and boards.....	2.5	1.4
Composition and plaster.....	.3	0.0
All other combinations.....	4.2	3.5

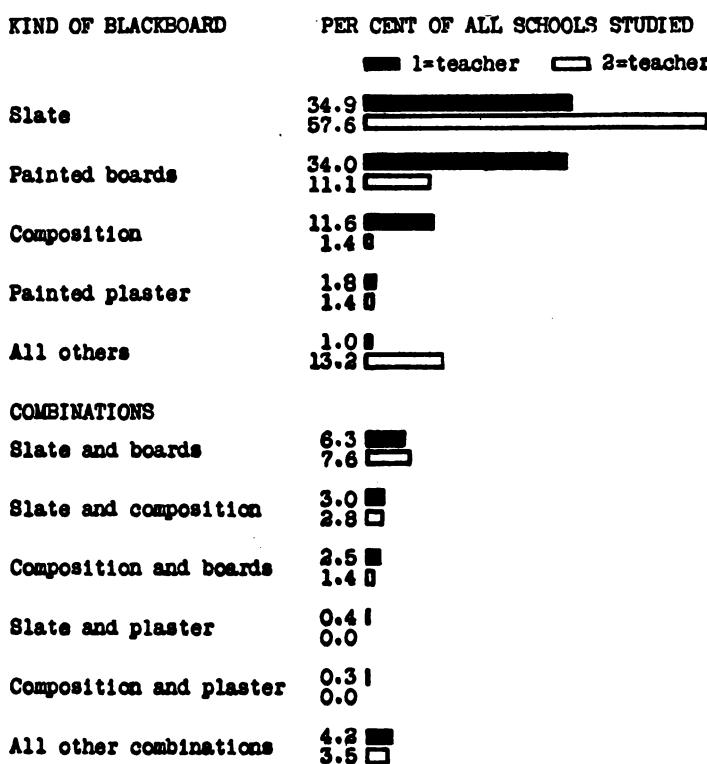


Diagram 13.—Kinds of blackboard in one- and two-teacher schools

purposes, is almost unknown. In one-teacher schools the old double non-adjustable desk is still the most common type.

Table 16 gives information regarding the lack of proper seating arrangements found in each school on the day it was scored. This table is so arranged as to show the percentage of schools having a certain percentage of desks or seats not properly adjusted. Thus in 32.6 percent of the one-teacher and in 48.9 percent of the two-teacher schools none of the seats were *not* properly adjusted.

TABLE 18.—MINIMUM HEIGHT OF BLACKBOARD

Height	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Under 26 inches.....	6.7%	2.7%
26 inches.....	1.7	4.7
27 "	3.1	6.0
28 "	3.3	4.0
29 "	1.0	4.7
30 "	14.4	13.5
31 "	3.0	2.7
32 "	6.4	4.0
33 "	4.8	3.4
34 "	4.7	8.1
35 "	3.1	1.3
36 "	31.5	28.2
37 "	2.4	0.0
38 "	3.1	6.0
39 "	1.6	1.3
40 "	3.5	3.4
41 "	.7	0.0
42 "	3.3	4.7
43 "	.5	0.0
44 "	.1	1.3
45 "	.5	..
46 "	.2	..
48 "	.4	..
Median =	35 inches	34 inches

Several interesting summaries may be made from this table, of which one is that one-half or more of the seats are not properly adjusted in 18.4 percent of the one-teacher and in 8.5 percent of the two-teacher schools; one-half or more of the desks are not properly adjusted in 19.9 percent of the one-teacher and in 10.9 percent of the two-teacher schools; and one-half or more of the seats and desks are not correctly placed as to distance between them in 49.6 percent of the one-teacher and in 39 percent of the two-teacher schools.

Seats and desks of the same size should be placed together. Instead, we often find that several sizes are found in each row, the small desks being placed toward the front, the large toward the rear. This is almost certain to mean maladjustment for the child. In 42 percent of the one-teacher and in 24.4 percent of the two-teacher schools the seats and desks are not arranged according to

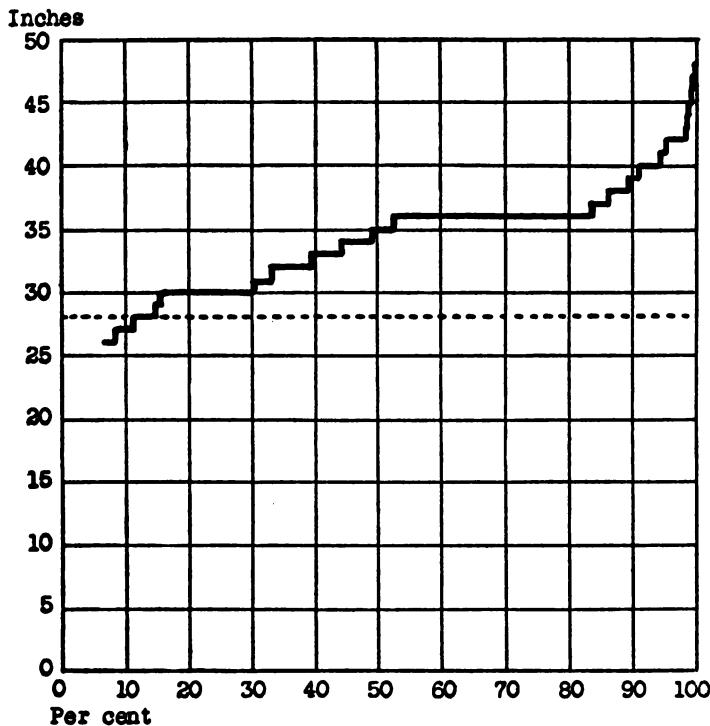


Diagram 14.—Height of lowest blackboard in one-teacher schools. The dotted line shows suitable height when there is but one height of blackboard

size. A little labor in rearrangement would adjust most of these situations.

(h) BLACKBOARDS.—A very important part of the building commonly neglected in the one-teacher schools is the blackboard. Only 49.5 percent of the one-teacher and 61.8 percent of the two-

teacher schools have either a composition or a slate blackboard entirely. Painted boards are all too common, especially in the one-teacher schools. These soon become a disgrace: the individual boards warp and draw apart, leaving gaps, while the paint soon wears off. Other types of blackboards found include painted plaster, slated canvas, oilcloth, and painted cloth.

The height at which blackboards are placed indicates a lack of forethought on the part of those who installed them. Table 18 shows that in the one-teacher schools the median height is 35 inches for the lowest blackboard in the school. In the two-teacher schools the situation is about the same. This is entirely too high for the smaller children, so that either the board is not so fully utilized as it ought to be by them or it is necessary to provide a bench for them to stand on while at the board. The inconvenience and the danger of the latter procedure are obvious. The number of linear feet of blackboard given in Table 19 is, for the two-teacher schools, the average of that found in the two class rooms.

TABLE 19.—NUMBER OF LINEAR FEET OF BLACKBOARD

Number of Feet	Percentage of All Schools Studied	
	One Teacher	Two Teachers
2- 3.9.....	0.1%	0.0%
4- 5.9.....	.8	0.0
6- 7.9.....	4.0	1.4
8- 9.9.....	6.6	1.4
10-11.9.....	8.9	.7
12-13.9.....	11.4	4.1
14-15.9.....	12.2	2.7
16-17.9.....	8.6	.7
18-19.9.....	9.0	9.5
20-21.9.....	8.0	8.2
22-23.9.....	6.7	6.8
24-25.9.....	5.7	8.8
26-27.9.....	4.3	2.0
28-29.9.....	2.1	5.4
30 and over.....	10.9	48.3
No data.....	.7	.
Median =	16.4 feet	29.4 feet

5. ARE THE FACILITIES PROVIDED SUCH AS ENABLE THE SCHOOL TO PERFORM IN FULL ITS FUNCTION IN THE COMMUNITY?

(a) PLAY FACILITIES.—Rural children have no other opportunity to learn to play equal to that which they have at school. For this

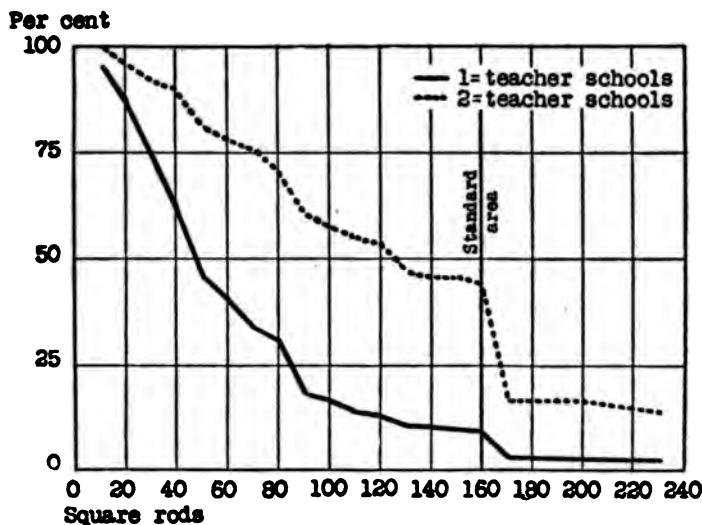


Diagram 15.—Percentage of one- and two-teacher schools having a playground area equal to or greater than the amount shown

TABLE 20.—SIZE OF SCHOOL GROUNDS

Number of Square Rods	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Under 10 square rods.....	4.1	0.0
10-19.....	8.4	4.1
20-29.....	13.1	4.1
30-39.....	11.9	1.4
40-49.....	16.6	9.6
50-59.....	5.6	2.7
60-69.....	6.3	2.7
70-79.....	3.5	4.1
80-89.....	12.4	11.0
90-99.....	1.4	2.7
100-109.....	2.6	2.7
110-119.....	.6	1.4
120-129.....	2.6	6.8
130-139.....	.3	1.4
140-149.....	.5	0.0
150-159.....	.3	1.4
160-169.....	6.5	27.4
170-199.....	.3	0.0
200-229.....	.3	2.7
230 and over.....	2.3	13.8
No data.....	.4	0.0

Median = 47 square rods 125 square rods

reason it is important that certain minimum essentials be provided. One requirement should be for sufficient space. The standard for this was set at 160 square rods because a careful planning showed that approximately this amount of ground would provide for the location of the schoolhouse, some trees and shrubbery, a small lawn, and a place for such games as tennis or volleyball, one old cat, pom-pom pull away, and for such play apparatus as are suggested in the essential standards. It is found, however, that very few (9.4 percent) of the one-teacher schools meet the standard, although almost half (43.9 percent) of the two-teacher

TABLE 21.—PLAYGROUND APPARATUS

Apparatus	Percentage of All Schools Studied One Teacher	Two Teachers
None.....	84.0%	67.5%
Swing.....	2.1	7.8
Teeter board.....	.8	3.8
Volley ball.....	1.6	7.8
Volley ball and net.....	.9	0.0
Baseball.....	5.6	9.1
Bat.....	1.9	7.8
Handball.....	1.3	2.6
Croquet set.....	.3	1.3
Slide.....	.3	1.3
Basket-ball only.....	.6	10.4
Both basket-ball and standards.....	.4	0.0
Horizontal bar.....	2.1	5.2
Bean bags.....	3.5	0.0
Quoits.....	2.0	1.3
Football.....	1.1	1.3
Gloves.....	.3	0.0
Jumping poles.....	.1	1.3
Jumping rope.....	.5	1.3
All others.....	.6	9.1

schools meet it. Since most of the schoolhouses were located and built when the need for play facilities was not recognized, it is easy to understand the reason for the situation. As it is, children must now generally use the road, with the constant danger from automobiles, except in the most remote districts, or the neighbor's field. Either alternative should, of course, be avoided.

The playground apparatus, too, is generally lacking. Eighty-four percent of the one-teacher and 67.5 percent of the two-teacher schools have none. A study of Table 21 will show the kinds of apparatus found and the percentage of schools having each kind.

Table 22 shows how these pieces of apparatus are distributed. Of the one-teacher schools, 85 have one piece, 54 have 2 pieces, 42 have 3 pieces, etc.

TABLE 22.—DISTRIBUTION OF PLAY APPARATUS

Number Pieces	One-Teacher Schools	Two-Teacher Schools
1.....	.85	8
2.....	.54	7
3.....	.42	3
4.....	.10	2
5.....	.2	2
6-10.....	0	1

(b) BULLETIN BOARD.—A definite and convenient place for showing pictures, clippings, etc., of interest to the pupils or for displaying meritorious work of the school is becoming an almost indispensable part of the class-room equipment. Most one- and two-teacher schools have nothing of the sort except where mouldings or win-

TABLE 23.—BULLETIN BOARD FACILITIES

Kind	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Cork carpet.....	3.9%	0.0%
Beaver board or similar material.....	4.4	2.6
Wood covered with burlap.....	.8	1.3
Wood.....	0.0	3.9
Burlap or similar material.....	13.1	31.2
All others.....	2.6	3.9
No data.....	.6	1.3
None.....	74.8	55.8

dow-frames are utilized. Cork carpet, beaver board or similar material, and soft wood covered with burlap are the most satisfactory materials for bulletin boards.

(c) ARTIFICIAL LIGHTING AND OTHER CONVENiences.—Artificial lights, too, are seldom provided, and where this is done, the facilities are often insufficient. Eighty-five and seven-tenths per-

TABLE 24.—KIND OF ARTIFICIAL LIGHTING PROVIDED

Kind	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Electricity.....	0.5%	20.0%
Gas.....	1.2	1.3
Oil lamps.....	12.1	20.0
None.....	85.7	58.7
No data.....	.5	0.0

cent of the one-teacher schools and 58.7 percent of the two-teacher schools have no artificial lighting, while in those having some pro-

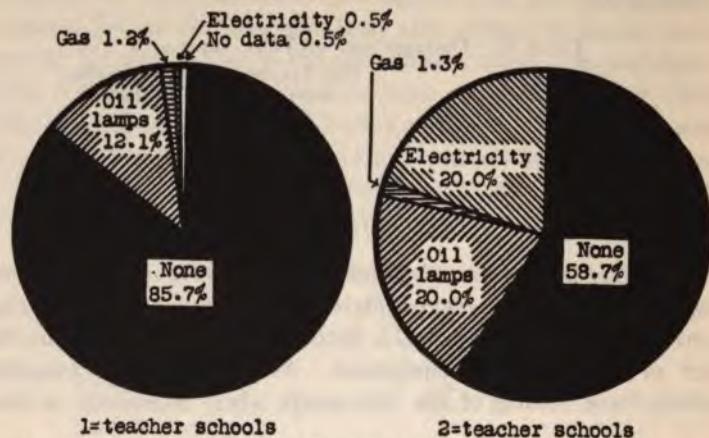


Diagram 16.—Kinds of artificial lighting in one- and two-teacher schools

vision it is not sufficient in 42.5 percent of the one-teacher and in 22.6 percent of the two-teacher schools.

A telephone, a necessity in most modern farm homes, is unusual in the school. While not nearly so important as many other things, the telephone becomes more than a convenience in cases of severe illness.

TABLE 25.—SCHOOLS HAVING A TELEPHONE

	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Yes.....	0.2%	0.0%
No.....	99.8	100.0

A teacher's room, likewise, is rare. Such a room, where the teacher may have privacy and an opportunity to relax once or twice during the day, would contribute to her efficiency and happiness. Modern schools are beginning to recognize this.

TABLE 26.—SCHOOLS HAVING A TEACHER'S ROOM

	Percentage of All Schools Studied	
	One Teacher	Two Teachers
Yes.....	0.3%	2.7%
No.....	99.7	97.3

(d) SPECIAL ROOMS.—With the broadening of the curriculum is coming a demand for proper facilities for teaching these newer subjects. A progressive rural school will have not only one or more work rooms for teaching the elements of home making and manual training, but a room where children may play when the weather makes outdoor recreation impossible, and a neighborhood room where the people of the district may come together for social, literary, or civic purposes. Table 27 indicates that these facilities

TABLE 27.—SPECIAL ROOMS

Room	Percentage of All Schools Studied			
	One Teacher		Two Teachers	
	Yes	No	Yes	No
Work room.....	0.6%	99.4%	8.0%	92.0%
Play room.....	1.3	98.7	20.0	80.0
Neighborhood room.....	.5	99.5	9.3	90.7

are seldom found in New York one-teacher schools. They do exist in a number of two-teacher schools. If class rooms were equipped with the movable desk-chair instead of the ordinary stationary desks, they could be used for either play or neighborhood activities.

6. DOES THE DISTRICT KEEP ITS EXISTING FACILITIES IN SUCH CONDITION THAT THE MAXIMUM OF EDUCATIONAL EFFICIENCY MAY BE SECURED?

This question has already been answered in part. Table 10 shows that unsanitary methods of drinking and washing are permitted in many schools; Tables 11 and 12, that unhygienic methods of cleaning are still followed; Table 16, that even such desks as are now in the schools are sometimes not so arranged as to reduce maladjustment to the minimum; and Table 18, that blackboards very frequently are placed too high for the smaller children. Further evidence is presented in Table 28. This table shows the percentage

of cases in which the *condition* (for definition and method of measurement see p. 23) of certain items was satisfactory and unsatisfactory.

All these facts indicate that even such facilities as are provided

TABLE 28.—CONDITION OF CERTAIN ITEMS IN THE BUILDING

	Percentage of All Schools Studied					
	One Teacher			Two Teachers		
	S	U	No Data	S	U	No Data
Shades.....	41.6%	57.0%	1.4%	47.3%	52.7%	0.0%
Desks.....	54.5	41.9	3.6	66.3	27.5	6.2
Blackboards.....	57.3	41.9	.8	79.3	20.7	0.0
Floor.....	63.4	36.0	.6	84.4	15.6	0.0
Walls.....	66.6	32.7	.7	79.2	19.5	1.3
Foundation.....	64.1	34.0	1.9	91.8	6.8	1.4
Roof.....	81.3	17.9	.8	93.2	5.5	1.3
Fencing.....	63.6	34.8	1.6	63.6	30.9	5.5
Play apparatus.....	48.8	44.6	6.6	53.8	15.4	30.8

Per cent

■ Satisfactory ■ Unsatisfactory ▨ No data

1=teacher schools

2=teacher schools

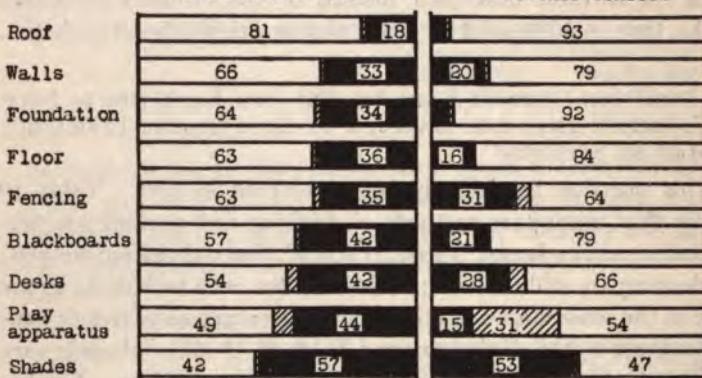


Diagram 17.—Condition of certain items in one- and two-teacher buildings

are not kept in such condition as to contribute fully to accomplishing the purpose of those facilities in the school. Such facts are a serious indictment of district control as it is now exercised in typical sections of the state. Whether this control should be taken away from the community or whether it would be possible, through leadership, to stimulate the community to manage, without detriment to the schools, such objective affairs as these is a problem of fundamental importance. The question is considered in detail in a later section (II B).

7. IN WHAT RESPECTS ARE THE BUILDINGS STRONG AND IN WHAT ARE THEY WEAK?

In Table 29 is presented a distribution, by percentages, of the essential standard credit assigned the various items of the building. Thus, on the factor of size of class room, there are none in the one-teacher schools that receive as low as 20 percent of the full value allowed; 2 percent receive from 21-40 percent of full value; 4 percent, 41-60 percent; 17 percent, 61-80 percent; 77 percent, 81-100 percent.

Only one-third of the total number of one-teacher schools studied is here represented, every third score card in the list being chosen for analysis. Since the schools had been kept together by supervisory districts, a thoroughly representative selection was assured. All of the two-teacher buildings were included.

8. ON WHAT POINTS DO THE BUILDINGS RECEIVE ADDITIONAL CREDIT?

Table 30 is based upon the same schools studied in Table 29, but here the credits are indicated in terms of actual values. The largest amounts of additional credit go, in the one-teacher schools, for size of class room, floor, and flag and pole. Where a blank is found in the "none" column this means that the standards required for essential credit are such as to make it unlikely that further improvement will be found in schools of this size. In the two-teacher schools the largest additional credits go to size of class room, floor, clock, flag and pole, and architectural appearance. A careful study of the table will show to what extent each item has a tendency

to meet more than the essential standards and how these tendencies compare in the two types of schools.

TABLE 29.—PERCENTAGE DISTRIBUTION OF ESSENTIAL STANDARD CREDIT

	One Teacher—Percent					Two Teachers—Percent				
	0-20	21-40	41-60	61-80	81-100	0-20	21-40	41-60	61-80	81-100
I. The class room										
1. Size.....	..	2	4	17	77	..	..	1	5	94
2. Shape.....	..	..	41	12	47	..	..	28	19	52
3. Window placement.....	1	73	13	5	8	..	24	24	13	39
4. Glass area.....	3	58	8	8	23	..	1	29	4	12
5. Shades.....	21	62	2	10	5	..	8	57	19	16
6. Floor.....	4	34	2	14	46	..	3	13	..	8
7. Walls.....	1	51	3	23	22	..	..	32	..	21
8. Color scheme.....	..	18	22	28	32	..	..	14	12	47
9. Inside finish.....	..	8	3	27	62	..	..	4	1	15
10. Blackboard.....	7	37	10	18	28	..	..	15	9	73
11. Bulletin board.....	83	2	7	..	8	61	..	1	12	2
12. Desks.....	2	36	30	15	17	..	..	13	24	20
13. Seating arrangement.....	2	20	33	28	17	..	1	11	16	36
14. Closet.....	58	25	3	4	10	30	16	..	15	39
15. Clock.....	63	..	..	..	37	32	..	2	..	55
II. Other rooms or room facilities										
16. Fuel room.....	7	7	35	19	32	..	..	7	15	10
17. Cloak room.....	47	11	11	11	20	..	9	21	7	22
19. Store room.....	88	3	..	2	7	60	..	4	..	8
20. Library.....	3	17	26	20	34	..	3	5	12	20
III. General service equipment										
24. Heating and ventilation.....	..	18	54	15	13	..	..	8	18	17
26. Cleaning system.....	3	56	14	12	15	..	29	9	11	51
27. Water supply.....	1	13	44	28	14	..	1	6	20	29
28. Artificial lighting.....	93	..	3	..	4	68	..	8	1	23
29. Toilets.....	2	7	24	29	38	..	1	5	7	24
31. Bell.....	15	..	..	..	85	..	..	..	..	99
32. First aid.....	91	..	1	..	8	87	..	..	..	13
33. Mail box.....	94	..	..	..	6	97	..	..	..	3
34. Flag and pole.....	4	3	23	10	60	..	..	9	5	86
IV. The building in general										
35. Vestibule.....	15	3	23	23	36	1	1	4	12	82
36. Material of construction.....	..	..	..	..	..	..	..	..	..	..
37. Foundation.....	1	3	11	26	59	..	1	1	12	86
38. Roof.....	2	10	6	31	51	..	..	1	3	12
39. Condition of repair.....	..	2	9	12	77	..	..	3	6	91
40. Location on grounds.....	2	11	15	37	35	..	..	7	4	9
41. Orientation.....	2	3	12	13	70	..	..	9	8	83
V. The grounds										
43. Size.....	23	29	25	12	11	1	17	19	17	46
44. Shape.....	2	2	13	5	78	..	..	4	5	91
45. Slope and drainage.....	5	10	12	18	56	..	3	13	17	67
46. Condition.....	2	5	24	31	38	..	3	19	37	41
47. Fencing.....	51	5	7	2	35	40	5	4	4	47
48. Walks.....	96	..	1	..	3	41	1	1	3	54
49. Playground apparatus.....	98	1	1	..	..	77	14	7	1	1
50. Environment.....	2	5	8	18	67	1	3	8	27	61
51. Accessibility.....	..	3	7	13	77	..	3	5	15	77

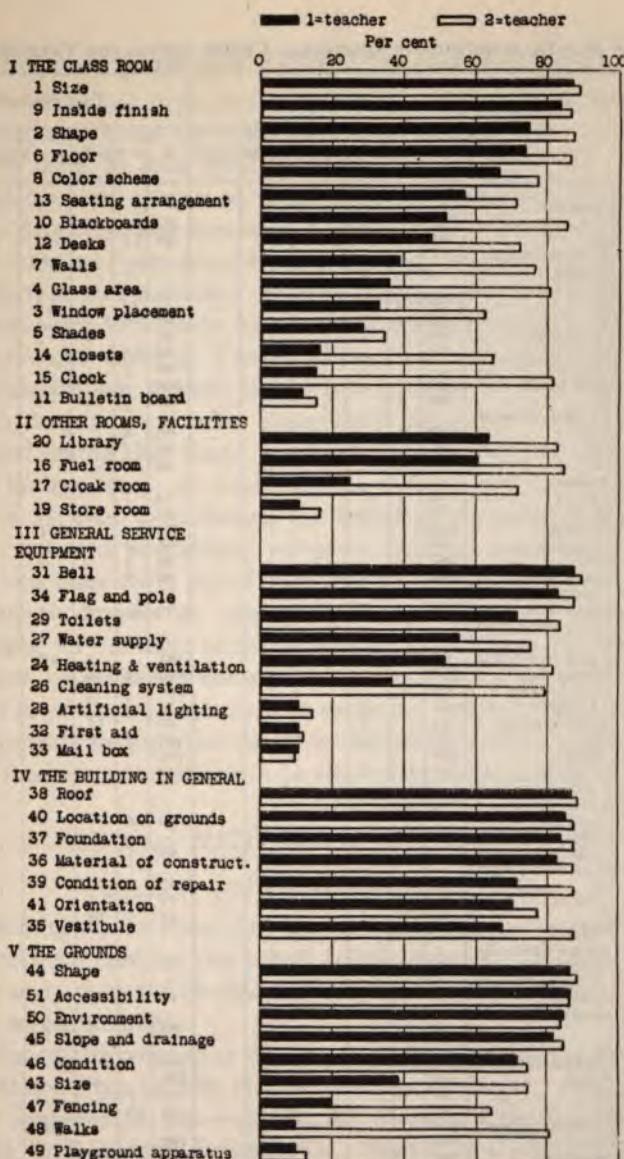


Diagram 18.—Median score of one- and two-teacher buildings on each of the items required for essential standard credit. The median is interpreted in terms of the percentage of a perfect essential standard score that is attained

TABLE 30.—DISTRIBUTION OF ADDITIONAL CREDIT AMONG THE VARIOUS ITEMS

	One Teacher						Two Teachers					
	0	1-5	6-10	11-15	16-20	21-25	0	1-5	6-10	11-15	16-20	21-25
I. The class room												
1. Size.....	58	7	32	3	..	..	52	7	40	1	..	..
2. Shape.....	94	6	..	..	..	..	89	11	..	..	..	..
3. Window placement.....	..	..	..	..	..	..	..	..	..	..	..	..
4. Glass area.....	..	..	..	..	..	..	..	..	..	..	..	..
5. Shades.....	..	..	..	..	..	..	..	..	..	..	..	..
6. Floor.....	80	20	..	..	..	..	72	28	..	..	..	..
7. Walls.....	99	1	..	..	..	..	92	8	..	..	..	..
8. Color scheme.....	99	..	1	..	..	..	91	..	9	..	..	..
9. Inside finish.....	97	3	..	..	..	..	84	15	1	..	..	..
10. Blackboard.....	..	..	..	..	..	..	99	1	..	..	..	..
11. Bulletin board.....	100	..	..	..	..	..	100	..	..	..	..	..
12. Desks.....	96	4	..	..	..	..	89	8	..	3	..	..
13. Seating arrangement.....	99	1	..	..	..	..	96	4	..	..	..	..
14. Closet.....	98	2	..	..	..	..	93	7	..	..	..	..
15. Clock.....	87	13	..	..	..	..	48	52	..	..	..	..
II. Other rooms												
16. Fuel room.....	96	4	..	..	..	..	93	7	..	..	..	..
17. Cloak room.....	92	3	5	..	..	..	85	..	15	..	..	..
18. Work room.....	100	..	..	..	..	..	99	..	..	1	..	..
19. Store room.....	99	1	..	..	..	..	96	4	..	..	..	..
20. Library.....	97	1	..	2	..	..	89	1	2	8	..	..
21. Teachers' room.....	100	..	..	..	..	..	99	1	..	..	..	..
22. Play room.....	98	1	..	..	..	1	92	..	1	7	..	..
23. Neighborhood room.....	100	..	..	..	..	..	93	..	3	..	1	3
III. General service equipment												
24. Heat and ventilation.....	99	..	..	1	..	..	81	..	1	18	..	..
25. Fire extinguisher.....	100	..	..	..	..	..	93	1	6	..	..	..
26. Cleaning system.....	99	1	..	..	..	..	100	..	..	..	..	..
27. Water supply.....	97	1	1	..	..	1	..	81	4	7	1	..
28. Artificial lighting.....	99	..	1	..	..	..	..	83	..	17	..	7
29. Toilets.....	92	6	1	1	..	..	..	88	1	9	2	..
30. Telephone.....	100	..	..	..	..	..	..	100	..	..	..	..
31. Bell.....	81	18	1	..	..	..	..	32	68	..	..	..
32. First aid.....	..	..	..	..	..	..	..	..	..	..	..	..
33. Mail box.....	..	..	..	..	..	..	..	..	..	..	..	..
34. Flag and pole.....	72	28	..	..	..	..	..	64	36	..	..	..
IV. The building in general												
35. Vestibule.....	..	..	..	..	..	..	..	99	1	..	..	..
36. Material of construction.....	98	..	2	..	..	..	..	85	..	15	..	..
37. Foundation.....	96	4	..	..	..	..	..	79	20	1	..	..
38. Roof.....	97	1	2	..	..	..	..	85	1	14	..	..
39. Condition.....	..	..	..	..	..	..	..	..	..	..	..	..
40. Location on grounds.....	..	..	..	..	..	..	..	..	..	..	..	..
41. Orientation.....	98	2	..	..	..	..	..	93	7	..	..	..
42. Architectural appearance.....	95	1	4	..	..	..	..	76	3	21	..	..
V. The grounds												
43. Size.....	99	..	..	1	..	..	..	88	1	5	6	..
44. Shape.....	..	..	..	..	..	..	..	..	..	..	..	..
45. Slope and drainage.....	100	..	..	..	..	..	..	100	..	..	..	..
46. Condition.....	99	..	..	..	1	..	..	100	..	..	..	..
47. Fencing.....	99	1	..	..	..	..	..	99	1	..	..	..
48. Walks.....	98	2	..	..	..	..	..	81	19	..	..	..
49. Playground apparatus.....	100	..	..	..	..	..	..	100	..	..	..	..
50. Environment.....	100	..	..	..	..	..	..	100	..	..	..	..
51. Accessibility.....	..	..	..	..	..	..	..	..	..	..	..	..
Other items.....	97	1	2	..	..	..	..	88	..	8	3	1

9. DOES THE COMMUNITY PROTECT ITS PROPERTY ADEQUATELY?

The state law gives authority to the trustee or the Board of Education to insure the schoolhouse and its equipment. In general this is done, as data given in Table 31 indicate. This table is based upon the schools of 12 supervisory districts for which complete data regarding insurance were available. It will be noticed that there are 7 percent of the 483 buildings that are not insured—a risk that no community ought to assume. While it is true that schoolhouses do not burn frequently, this does happen often enough to serve as a warning. Thus in 26 supervisory districts from which information was secured 17 had had no losses by burning in five years, but in the 9 other supervisory districts 11 buildings had burned during that time. In at least one of these 11 cases there was no insurance. It would appear, too, from the facts given in Table 31, that, even though the buildings are sadly deficient in most cases for educational purposes, they are sometimes insured for less than their actual sale value. District superintendents frequently express an opinion that this is the case. Differences in value for buildings of the same quality appear in Table 31 that cannot be explained entirely by the location of schoolhouses as near to or far from places that make the property more salable. Apparently an important factor is whether or not the trustee secures the total insurance that will be allowed by the insuring company.

B. BUILDINGS WITH THREE OR MORE TEACHERS

1. HOW THE FACTS WERE COLLECTED

Here again the score card method was used, the Strayer-Engelhardt score card for city school buildings being employed. Since this score card and its standards are now widely known, they are not reproduced here.

The greater complexity of this score card did not make it feasible to train a large number of district superintendents. Accordingly four experienced men—Dr. R. M. Stewart, Cornell University; Supt. M. G. Nelson, Delaware Co.; Supt. L. J. Cook, Ontario Co.; Supt. F. A. Beardsley, Tompkins Co.—were secured. Two days were spent in preparation for the work. Two buildings of quite

TABLE 31.—AMOUNT OF INSURANCE IN ONE-TEACHER SCHOOLS

Total Score	No Insurance	Under \$100	\$100-\$199	\$200-\$299	\$300-\$399	\$400-\$499	\$500-\$599	\$600-\$699	\$700-\$799	\$800-\$899	\$900-\$999	\$1,000-\$1,199	\$1,100-\$1,299	\$1,200-\$1,299	\$1,300-\$1,399	\$1,400-\$1,499	\$1,500-\$1,599	\$1,600-\$1,699	\$1,700-\$1,799	\$1,800-\$1,899	\$1,900-\$1,999	\$2,000-\$2,099	\$2,100-\$2,199	\$2,200-\$2,299	\$2,300-\$2,399	\$2,400-\$2,499	\$2,500-\$2,599	\$2,600-\$2,699	\$2,700-\$2,799	\$2,800-\$2,899	\$2,900-\$2,999	\$3,000	Over \$3,000	Total
Under 100				
100-199				
200-299				
300-399	4	...	...	...	1	2	4	5	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
400-499	9	...	...	...	3	2	5	5	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
500-599	14	...	...	...	2	9	25	24	26	11	18	3	10	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
600-699	7	...	...	...	2	1	9	29	27	13	20	7	28	1	14	4	8	1	2	1	1	1	1	1	1	1	1	1	1		
700-799	...	...	...	...	1	2	12	7	5	5	1	12	6	...	2	10	2	2	1	2	1	1	1	1	1	1	1	1	1	
800-899	...	...	...	...	1	2	12	7	5	5	1	12	6	...	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	
900-999	...	...	...	...	1	2	12	7	5	5	1	12	6	...	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	
1,000+	...	...	...	...	1	2	12	7	5	5	1	12	6	...	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	
Total	34	...	7	15	40	70	69	33	44	11	60	1	24	..	6	21	5	2	1	16	..	1	1	3	1	1	5	14,483				

different types were scored, through which experience uniform methods of recording data were developed, possible misinterpretations of standards were cleared up, and values to be assigned for situations not specifically stated in the standards, yet commonly found in New York, were agreed upon.

2. THE SCORES

Table 32 gives a distribution of the scores assigned. In order to facilitate analysis and comparison the schools are divided into three classes: those of three and four teachers; of five to nine teachers; of 10 teachers and over. The results will be stated in percentages so that the reader should keep in mind the total number of schools involved: 31 of the 3-4 teacher group; 70 of the 5-9 group; 45 of the 10 + group. While this division is more or less arbitrary, it does recognize types sufficiently different to justify the use of somewhat different standards. Accordingly the scores here presented have been adjusted (Table 33) so as to make a

TABLE 32.—ORIGINAL SCORE FOR SCHOOLS OF THREE OR MORE TEACHERS

Score	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
0-49.....	..	..	..
50-99.....	..	..	..
100-149.....	..	..	..
150-199.....	..	..	..
200-249.....			
250-299.....	6.5%	1.4%	..
300-349.....	6.5	4.3	..
350-399.....	16.1	5.8	..
400-449.....	16.1	10.0	2.2%
450-499.....	16.1	18.6	2.2
500-549.....	6.5	8.6	8.9
550-599.....	6.5	15.7	17.8
600-649.....	22.5	20.0	15.6
650-699.....	3.2	4.3	11.1
700-749.....	..	4.3	11.1
750-799.....	..	5.7	11.1
800-849.....	..	1.4	11.1
850-899.....	..	..	8.9
900-949.....	..	..	..
950-999.....	..	..	..
1,000.....	..		
	$Q_1 = 387$	459	583
	Median = 465	554	665
	$Q_3 = 603$	626	777

comparison of the groups more fair. This adjustment has been of two kinds: (1) Certain allowances were made individual schools because of function or type of construction.¹ (2) Other allow-

TABLE 33.—ADJUSTED SCORE FOR BUILDINGS OF THREE AND MORE TEACHERS

Score	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
0- 49.....	..	..	..
50- 99.....	..	..	..
100-149.....	..	..	..
150-199.....	..	..	..
200-249.....	..	..	..
250-299.....	..	..	..
300-349.....	6.5%	1.4%	..
350-399.....	3.2	4.3	..
400-449.....	9.7	4.3	2.2%
450-499.....	16.1	11.4	2.2
500-549.....	16.1	12.9	8.9
550-599.....	12.9	10.0	17.8
600-649.....	3.2	10.0	15.6
650-699.....	6.5	18.6	11.1
700-749.....	19.4	11.4	11.1
750-799.....	3.2	5.7	11.1
800-849.....	3.2	4.3	11.1
850-899.....	..	4.3	8.9
900-949.....	..	1.4	..
950-999.....	..	..	..
1,000 +.....	..	..	..
	$Q_1 = 467$	514	584
	Median = 545	628	665
	$Q_3 = 702$	709	778

¹ The following allowances were made in the case of individual schools:

- (1) Three and four teachers
 - (a) Stairways and corridors in buildings of one story.
 - (b) Fireproofness in buildings of one story.
 - (c) Laboratories in buildings housing grades not higher than the eighth.
- (2) Five to nine teachers
 - (a) Fire escapes in building under three stories.
 - (b) Exit lights where there are no fire escapes.
 - (c) Study halls in buildings housing grades not above the sixth.
 - (d) Laboratories where there are no grades above the eighth.

For buildings of ten teachers or over no adjustments are made.

In a few cases, *e. g.*, heating system and toilets, some internal changes in the standards—not merely eliminations of items—might be attempted, but the task of making such adjustment was so complex because of lack of generally accepted standards for different types of buildings that it was decided to leave the standards as stated by the authors. The advantage of this is, of course, that we have a common basis for interpreting situations.

ances were made the schools as a group, on the grounds that such requirements would be quite unusual.¹

The reasons for such modifications will be apparent without further explanation than the information given in the footnotes. Present knowledge does not enable us to state such differences on a scientifically exact basis, but the writer is convinced that the distinctions here made are in general valid. With the modifications thus definitely stated, the reader familiar with the Strayer-Engelhardt score card is enabled to make such further changes as he may think desirable.

A word should be said regarding the method of making these adjustments. An illustration will be clearest. One school received 362 points on the basis of the standards as they are. Items with a credit of 70 points were not required on basis 1 (p. 74); on basis 2 140 points were allowed, since this is a four-teacher school. Together there are 210 of the 1,000 points not required of this building. Clearly these 210 points cannot be added to the original score of 362, since to do so would be to assume that if these items were present they would be present in complete compliance with the standards—an assumption quite unjustified. What should be done is to interpret the original 362 points in terms of the number of points now required for a perfect score in this building, that is,

¹ The group allowances made were:

	Three to Four Teachers Score	Five to Nine Teachers Score
Fans and motors	10	10
Special provisions	5	5
Escapes	20	0
Fire doors and partitions	10	10
Exit lights	5	0
Mechanical service system	10	10
Auditorium	15	15
Study hall	5	0
Gymnasium	10	10
Swimming pool	5	5
Lunch room	10	0
Officer's room	10	0
Music room	10	10
Janitor's room	5	5
Lecture room	10	10
Studios	5	5
	140	95

1,000—210 or 790. This building is then entitled to 362 out of 790 points, which reduced to a 1,000-point basis ($\frac{362}{790}$ of 1,000) gives 458, the adjusted score.

These scores would best be interpreted on the basis suggested by the authors of the score card:¹

"Experience resulting from the application of the score card to hundreds of school buildings in various sections of the United States suggests that a score of 900 to 1,000 points indicates a

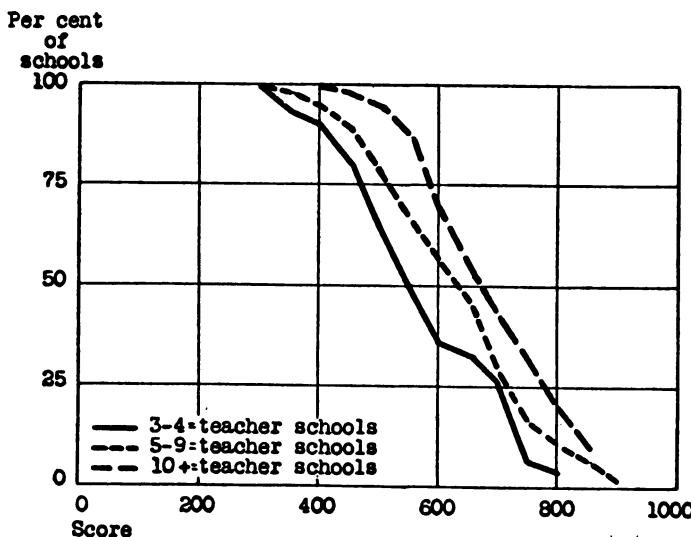


Diagram 19.—Percentage of schools with three or more teachers having adjusted scores equal to or greater than those shown

highly satisfactory degree of construction and equipment. In fact, in only a few minor respects does such a building deviate from acceptable standards.

"A rating between 700 and 900 points is fairly satisfactory. Such a rating should be studied in the light of its component parts. Slight building alterations, the need for which will be indicated by the low score allowed on such items, will tend to raise considerably

¹ General Report on School Buildings and Grounds of Delaware. Bulletin of the Service Citizens of Delaware, Vol. 1, No. 3, pp. 195, 196.

the score of a building in this group. A score of 500 to 700 points has meant that considerable alteration was needed before these buildings could be brought to a satisfactory standard of efficiency.

"When scores of buildings have fallen below 500 points, it has been the universal judgment of those who have built the score card that speedy abandonment of those buildings for school purposes was the only justifiable course to be followed. In all instances where scores of 500 points or less have resulted it has seemed that expenditures for repairs and reconstruction would be highly excessive. It has also seemed that there was little possibility, even with the expenditure of relatively large sums of money, to secure as a result of such repairs and reconstruction a building which was suitable for school purposes."

If Table 33 is interpreted on the basis suggested by the authors, 1.4 percent only of the 5-9 teacher group fall into the highly satisfactory class, while 25.8 percent of the 3-4 teacher group, 25.7 percent of the 5-9 group, and 42.2 percent of the 10 + group are fairly satisfactory. The percentage of unsatisfactory buildings is thus seen to be high in all three groups. Whether or not the reader accepts the basis of interpretation given, the facts do make clear that the great majority of communities need to analyze existing building facilities to see where improvements need to be made and to devise ways and means of making these improvements most economically.

It is doubtless unnecessary to warn the reader that a comparison of one- and two-teacher buildings with these larger ones on the basis of scores is not feasible because of differences in standards employed in the two score cards.

3. SOME GENERAL INFORMATION

Table 34 gives the facts regarding the material of which these buildings are constructed. The majority of the 3-4 teacher and the 5-9 teacher schools are frame. Only in the 10 + teacher group do we find something more substantial predominating.

In Tables 35 and 36 are presented data regarding the type of building: one showing the number of stories, the other the shape. As these facts indicate, there has been a tendency to build the

rectangular and square shape, and in some cases to build more stories than is now customary in buildings of that size.

TABLE 34.—MATERIAL OF CONSTRUCTION

	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
Frame.....	63.3%	60.9%	6.6%
Brick.....	30.0	31.9	91.2
Concrete and stone.....	6.7	7.2	2.2

TABLE 35.—NUMBER OF STORIES

	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
One story.....	35.5%	5.7%	0.0%
Two stories.....	64.5	88.6	88.9
Three stories.....	0.0	5.7	11.1

TABLE 36.—SHAPE OF BUILDINGS

	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
Square.....	16.1%	7.1%	2.2%
Rectangular.....	51.6	58.6	51.1
L.....	6.5	17.1	13.3
T.....	22.5	10.0	11.1
H.....	3.3	4.3	8.9
U.....	0.0	0.0	2.2
No data.....	0.0	2.9	0.0

The distribution of these buildings as to function is also interesting. In the table below the facts are so arranged as to indicate the percentage of schools that house all grades up to and including the one where the percentage is given. Thus 3.2 percent of the 3-4 teacher group (in this case only one school) include only the first

TABLE 37.—DISTRIBUTION AS TO FUNCTION OF BUILDING

Grades Housed	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
1.....	0.0	0.0%	0.0%
2.....	3.2	0.0	0.0
3.....	0.0	0.0	0.0
4.....	3.2	2.8	0.0
5.....	0.0	0.0	0.0
6.....	3.2	1.4	6.7
7.....	0.0	1.4	0.0
8.....	29.1	10.1	4.5
9.....	12.9	0.0	0.0
10.....	38.7	4.3	2.2
11.....	0.0	0.0	0.0
12.....	9.7	75.8	73.3
4-year high school.....	..	0.0	2.2
3-12.....	..	0.0	2.2
6-12.....	..	1.4	0.0
7-12.....	..	1.4	4.5
8-12.....	..	0.0	2.2
9-12.....	..	0.0	2.2
Primary and vocational.....	..	1.4	0.0

two grades; 73.3 percent of the 10 + teacher group have all twelve grades. Other combinations of grades are presented in the latter part of the table. The general practice is for a building to house all twelve grades in both groups of larger schools. In the 3-4 teacher buildings eight and ten grades are the most frequently found.

4. TO WHAT EXTENT ARE MODERN FACILITIES PROVIDED?

In this section there will be presented an analysis of situations that are particularly fundamental, no attempt being made to cover all those that are important.

(a) FLOOR AND AIR SPACE.—The New York statutes require that new and remodeled buildings have 15 square feet of floor space and 200 cubic feet of air space per pupil. Tables 38 and 39 show

TABLE 38.—DISTRIBUTION OF SCHOOLS, SHOWING PERCENTAGE OF CLASS, RECITATION, AND STUDY ROOMS IN WHICH THE STANDARD OF 15 SQUARE FEET OF FLOOR SPACE PER PUPIL IS MET

Percent of Rooms Meeting Standards	Percentage of All Such Rooms Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
100	66.6%	54.4%	33.3%
90-99	0.0	0.0	6.7
80-89	0.0	17.1	0.0
70-79	10.0	10.0	24.4
60-69	6.7	7.1	6.7
50-59	6.7	2.8	13.3
40-49	0.0	4.3	6.7
30-39	0.0	4.3	4.4
20-29	0.0	0.0	0.0
10-19	6.7	0.0	0.0
1.0-9.9	0.0	0.0	2.2
0	3.3	0.0	2.2

TABLE 39.—DISTRIBUTION OF SCHOOLS, SHOWING PERCENTAGE OF CLASS, RECITATION, AND STUDY ROOMS IN WHICH THE STANDARD OF 200 CUBIC FEET OF AIR SPACE PER PUPIL IS MET

Percent of Rooms Meeting Standards	Percentage of All Such Rooms Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
100	40.0%	20.0%	35.6%
90-99	0.0	2.9	0.0
80-89	0.0	21.4	13.3
70-79	10.0	7.1	8.9
60-69	6.7	10.0	13.3
50-59	20.0	15.7	15.6
40-49	0.0	2.9	2.2
30-39	10.0	8.6	2.2
20-29	0.0	7.2	0.0
10-19	0.0	1.4	2.2
1.0-9.9	0.0	1.4	0.0
0	13.3	1.4	6.7

to what extent the buildings studied meet these standards in class, recitation, and study rooms.

(b) NATURAL LIGHTING.—While the situation in these schools is better than in those having one and two teachers regarding the ratio of glass area to floor space, it is still inadequate in many schools. In Table 40 are given the facts regarding this matter,

TABLE 40.—RATIO OF GLASS AREA TO FLOOR AREA IN CLASS, RECITATION, AND STUDY ROOMS

Ratio	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
1: 2	1.0%	0.0%	0.0%
1: 3	6.1	2.9	3.2
1: 4	11.3	12.6	16.2
1: 5	18.5	26.2	28.0
1: 6	31.7	22.7	19.1
1: 7	8.2	10.1	16.1
1: 8	10.0	11.8	10.5
1: 9	7.1	5.3	5.5
1:10	4.1	4.6	.6
1:11	0.0	1.6	.2
1:12	0.0	.7	.2
1:13	2.0	.3	.2
1:14	0.0	.3	.2
1:15	0.0	.0	.0
1:16	0.0	.0	.0
1:17	0.0	.3	.0
1:18	0.0	.3	.0
1:19	0.0	.3	.0
Median in	1:6 group	1:6 group	1:5 group

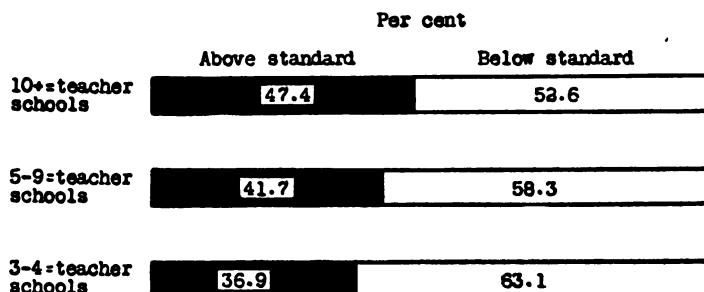


Diagram 20.—Percentage of schools with three or more teachers having a ratio of glass area to floor space equal to or above the standard of 1:5

tabulated on the basis of number of class, recitation, and study rooms. Other rooms are not included because the need for the amount of light specified in the standard is not so great in rooms that are not used continuously for study. Even in the 10+ teacher group the median falls about where the minimum should be, while in the other groups the situation is worse.

Table 41 gives somewhat similar data, but, instead of indicating the number of rooms that have a given ratio, it shows how large a

TABLE 41.—DISTRIBUTION OF SCHOOLS, SHOWING PERCENTAGE OF CLASS, RECITATION, AND STUDY ROOMS IN WHICH THE RATIO OF GLASS TO FLOOR AREA IS BELOW 1:5

Percentage of Rooms Having Ratio of Glass to Floor Area Below 1:5	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
0%	25.8%	15.5%	15.6%
1-9	00.0	00.0	00.0
10-19	00.0	5.6	8.9
20-29	3.2	8.5	2.2
30-39	3.2	1.4	8.9
40-49	00.0	4.2	4.4
50-59	3.2	8.5	11.1
60-69	9.7	7.0	11.1
70-79	0.0	5.6	6.7
80-89	0.0	11.3	15.6
90-99	0.0	0.0	2.2
100	54.9	32.4	13.3

percentage of rooms in each school fails to meet the standard. Thus, of the 3-4 teacher group, 25.8 percent of the schools meet the standard in all rooms, while in 54.9 percent of the schools it is not met in any of the rooms. In the 3-4 teacher schools 67.8 percent of the schools have one-half or more of their rooms that fail to meet the standard; in the 5-9 group the percentage is 64.8; in the 10+ group it is 59.9.

The top-roller shade is still the prevailing type in these schools, though there is a larger percentage of rooms having such modern

types as the movable and double roller than is the case in the one- and two-teacher schools.

TABLE 42.—PERCENTAGE OF CLASS, RECITATION, AND STUDY ROOMS HAVING DIFFERENT TYPES OF SHADES

Type of Shade	Percentage of All Such Rooms Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
Top roller.....	75.0%	72.3%	63.3%
Bottom roller.....	0.0	2.8	.5
Middle roller.....	0.0	5.2	10.6
Double roller.....	21.3	8.2	15.9
Movable.....	.9	6.9	1.4
Shutter.....	0.0	0.0	5.9
None.....	.9	3.8	2.2
No data.....	1.9	.8	.2

The percentage of shades that are translucent, as judged by color, is considerably higher than in the smaller buildings.

Conditions in regard to the direction from which the light comes

TABLE 43.—PERCENTAGE OF CLASS, RECITATION, AND STUDY ROOMS HAVING TRANSLUCENT AND OPAQUE SHADES (ON BASIS OF COLOR)

Color of Shade	Percentage of All Such Rooms Studied		
	Three to Four Teachers	Four to Five Teachers	Ten + Teachers
Opaque.....	62.9%	52.4%	58.5%
Translucent.....	36.2	43.0	34.4
None.....	.9	3.8	7.1
No data.....	.0	.8	0.0

are better than in the one- and two-teacher schools. Here, while the left and rear lighting is most frequent, the unilateral type is found in a considerable percentage of the cases.

TABLE 44.—PERCENTAGE OF CLASS, RECITATION, AND STUDY ROOMS HAVING LIGHT FROM DIFFERENT DIRECTIONS

Window Placement	Percentage of All Such Rooms Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
Front.....	0.0%	0.0%	.2%
Left.....	16.2	26.5	44.2
Rear.....	.9	1.4	3.4
Right.....	0.0	.5	.2
Front, left.....	2.7	2.2	1.5
Front, rear.....	0.0	0.0	0.0
Front, right.....	0.0	0.0	0.0
Left, rear.....	53.2	47.6	43.5
Left, right.....	2.7	1.4	1.3
Rear, right.....	4.5	5.8	2.6
Front, left, rear.....	0.0	3.9	0.0
Front, left, right.....	0.0	.2	0.0
Left, rear, right.....	19.8	8.4	2.2
Front, rear, right.....	0.0	.7	0.0
Front, left, rear, right.....	0.0	.5	0.0
Top.....	0.0	.0	.2
No data.....	0.0	.9	.7

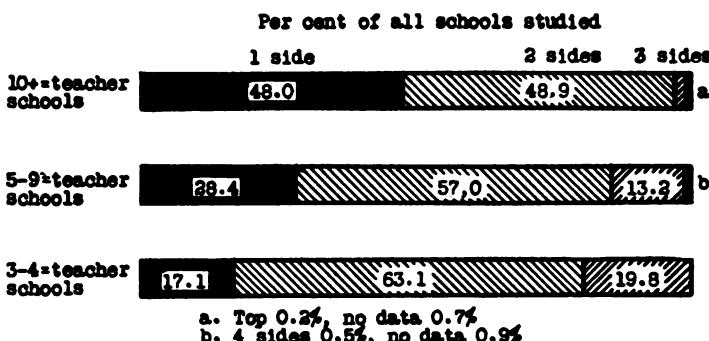


Diagram 21.—Window placement in schools with three or more teachers

(c) HEATING FACILITIES.—A few of these larger buildings, especially in the 3-4 teacher group, still use stoves (Table 45), but modern types of heating are generally found. Relatively few have thermostatic control (Table 46).

TABLE 45.—HEATING FACILITIES

Kind	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
Hot-air furnace.....	54.9%	45.7%	35.5%
Steam boiler.....	29.0	38.6	46.7
Hot water boiler.....	0.0	2.8	2.2
Gas stoves.....	3.2	0.0	0.0
Stoves.....	12.9	4.3	0.0
Combination 1 and 2.....	0.0	8.6	15.6
No data.....	0.0	0.0	0.0

(d) FIRE PROTECTION.—Table 47 presents several phases of this subject. The situation varies so much that each group of schools should be considered separately.

In the 5-9 group, 51.4 percent have no apparatus; 44.3 percent have only one kind of apparatus; 75.7 percent have no fire-retarding features; all except 14.2 percent have either a gong or a special

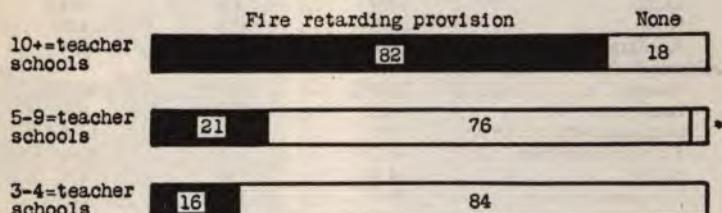
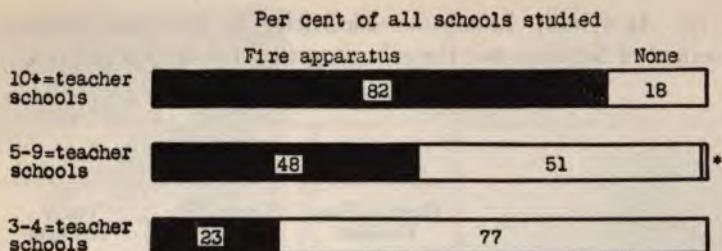
TABLE 46.—THERMOSTATIC CONTROL

Is There Thermostatic Control?	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
Yes.....	0.0%	7.2%	22.2%
No.....	96.8	90.0	76.6
No data.....	3.2	2.8	2.2

fire alarm system; 22.9 percent have combustible and inflammable material stored in the building; in 91.4 percent of the cases the outside doors open out; in 70 percent of the schools none of the exit doors are supplied with panic bolts. It is, therefore, clear that many buildings are lacking facilities essential to the proper protection of life and property.

TABLE 47.—VARIOUS FACTORS IN FIRE PROTECTION

Factors in Fire Protection	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
1. Apparatus			
Extinguishers	22.5%	41.4%	68.8%
Fire hose	0.0	11.4	35.5
Automatic sprinkler	0.0	0.0	0.0
None	77.5	51.4	17.7
No data	0.0	1.4	0.0
2. Number of kinds of apparatus			
One kind	22.5%	44.3%	55.5%
Two kinds	0.0	4.3	24.4
3. Fire retarding provisions			
Basement isolated from first floor	0.0%	5.7%	4.4%
Basement ceiling fireproof	0.0	5.7	28.8
Heating apparatus enclosed	16.1	20.0	51.1
No such provisions	83.9	75.7	18.0
No data	0.0	2.8	0.0
4. Alarm systems			
Automatic	0.0%	0.0%	0.0%
Special signal	12.9	48.5	44.4
Gong	29.0	54.2	71.1
None	58.1	14.2	4.4
No data	0.0	0.0	0.0
5. Combustible and inflammable material stored in building			
Yes	12.9%	22.9%	26.6%
No	87.1	72.9	73.3
No data	0.0	4.2	0.0
6. Outside doors open			
Out	83.9%	91.4%	93.4%
In	9.7	5.7	0.0
Some of each	3.2	2.9	2.2
No data	3.2	0.0	4.4
7. Percentage of exit doors supplied with anti-panic bolts			
0%	77.4%	70.0%	33.3%
1-24	0.0	0.0	0.0
25-49	3.2	4.3	2.2
50-74	6.5	5.7	17.8
75-99	0.0	0.0	6.7
100	12.9	17.1	35.6
Not certain	0.0	2.9	4.4



* No data.

Diagram 22.—Fire protection in buildings with three or more teachers

(e) METHODS OF CLEANING.—Even in these larger buildings dry sweeping is still the prevailing form, while approximately three-fourths only of the schools have oiled floors.

TABLE 48.—METHODS OF CLEANING

	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
1. Sweeping			
Dry.....	74.2%	72.9%	60.0%
Compound.....	19.3	25.7	33.4
Vacuum.....	0.0	0.0	4.4
No data.....	6.5	1.4	2.2
2. Is floor oiled?			
Yes.....	67.8%	75.7%	82.2%
No.....	29.0	24.3	17.8
No data.....	3.2	0.0	0.0

(f) ARTIFICIAL LIGHTING.—Electricity is the most frequent method of lighting, but there is altogether too large a percentage

TABLE 49.—ARTIFICIAL LIGHTING

	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
1. Type			
Gas.....	9.7%	5.7%	26.6%
Electricity.....	22.6	61.4	91.1
Lamp.....	12.9	1.4	0.0
None.....	54.8	32.8	4.4
No data.....	0.0	0.0	0.0
2. Method			
Direct.....	25.8%	50.0%	46.7%
Indirect.....	3.2	4.3	6.7
Semi-indirect.....	3.2	4.3	13.4
Two or more kinds.....	3.2	8.6	26.6
None.....	54.9	32.8	4.4
No data.....	9.7	0.0	2.2

of the 3-4 and 5-9 teacher groups that have no provision. This means that in such places the building cannot be utilized to the fullest extent for community and extra-curriculum activities.

TABLE 50.—TYPES OF BLACKBOARD

Type	Percentage of All Rooms Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
1. Slate.....	54.7%	79.4%	81.5%
2. Composition.....	13.9	8.3	5.9
3. Wood.....	10.2	1.0	0.0
4. Cloth.....	1.9	.2	0.0
5. Plaster.....	.9	0.0	0.0
Combinations			
1 and 2.....	6.4	2.9	1.3
1 and 3.....	4.6	.6	0.0
1 and 4.....	.9	.8	0.0
1 and 5.....	2.8	.2	1.9
All others.....	.9	.8	1.5
No data.....	2.8	5.8	7.8



Evidence of community pride in its school. Canandaigua No. 9, Ontario County. Score: 900 + 95



One type of recently constructed village school building. Consolidated school at Orchard Park, Erie County



Built about 1870; remodeled about 1905; stairway inadequate in case of fire; no provision for fire protection; no artificial lighting system; outdoor toilets in bad condition; laboratory quite inadequate; fairly good study hall but no other special rooms; large playground area but no play apparatus. Score: 438.



What a visit to the basement revealed



Evidence of community apathy

An illustration of a poor building in a small village

(g) BLACKBOARDS.—The blackboard situation is much better here than in the one- and two-teacher schools, though in a few of the 3-4 teacher buildings some attention still needs to be directed to this matter.

(h) PLAY FACILITIES.—In the discussion of the grounds for one-teacher schoolhouses it was pointed out that a space of about one acre was necessary in order to provide room for the building, walks, some lawn, shrubbery, and trees, and for playing certain games that are common in the rural school. In the larger schools, where the number of children is greater, it has been customary to use another unit of measurement—the number of square feet per pupil in the playground. The size of this unit has been variously stated. Strayer and Englehardt use as the standard 100 square feet exclusive of space for gardens and athletic fields. On this basis the first two groups rank well, though it must be remembered that there is still a fairly large percentage that fall below this figure. The 10 + teacher group is far short of meeting this standard.

TABLE 51.—PLAYGROUND AREA PER PUPIL IN AVERAGE DAILY ATTENDANCE

Square Feet Per Pupil	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
0- 24	6.5%	2.9%	20.1%
25- 49	6.5	5.7	6.7
50- 74	0.0	5.7	22.2
75- 99	3.2	7.1	2.2
100-124	9.7	8.6	15.6
125-149	3.2	2.8	4.4
150-174	3.2	4.4	0.0
175-199	3.2	8.6	0.0
220-224	12.8	2.8	6.7
225-249	6.5	4.4	0.0
250-274	6.5	7.1	4.4
275-299	0.0	2.8	2.2
300-324	0.0	2.8	2.2
325-349	0.0	8.6	2.2
350-374	0.0	0.0	0.0
375-plus	38.7	20.0	6.7
No data	0.0	5.7	4.4

Median = 232 sq. ft.

196 sq. ft.

71 sq. ft.

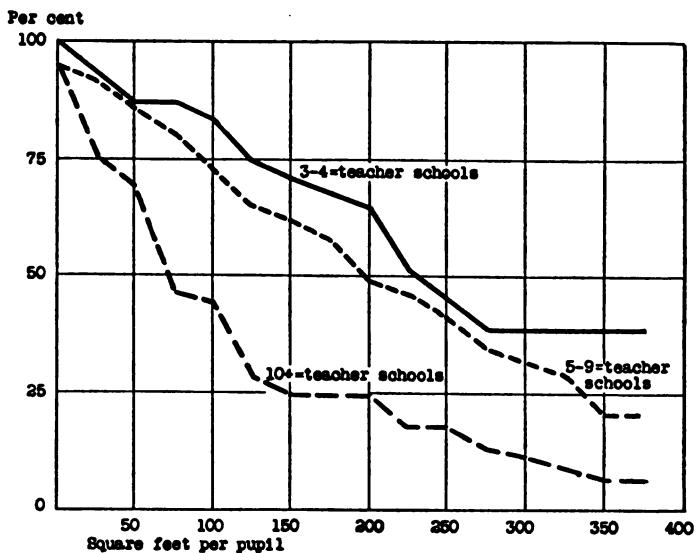


Diagram 23.—Percentage of schools with three or more teachers having playground area per pupil equal to or larger than the amount shown

Playground apparatus is sadly neglected, as the figures in Table 52 show. The percentage of schools in the different groups having no apparatus is 77.3 percent, 61.5 percent, and 60.0 percent, respectively.

TABLE 52.—NUMBER OF PIECES OF PLAYGROUND APPARATUS

Number of Pieces	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
None	77.3%	61.5%	60.0%
1	12.9	22.8	15.6
2	6.5	5.7	8.9
3	0.0	2.9	6.7
4	3.3	5.7	4.4
5	0.0	1.4	2.2
6-10	0.0	0.0	2.2

(i) SPECIAL ROOMS.—Table 53 is interesting for the purpose of showing the extent to which buildings of different size have various kinds of special rooms. In many of these cases these rooms are assembly rooms, laboratories or libraries by courtesy largely, as

TABLE 53.—PERCENTAGE OF SCHOOLS HAVING CERTAIN KINDS OF SPECIAL ROOMS

Kind of Special Room	Percentage of All Schools Studied		
	Three to Four Teachers	Five to Nine Teachers	Ten + Teachers
Assembly.....	3.2%	1.4%	8.8%
Auditorium.....	6.4	11.4	33.3
Commercial.....	..	5.7	22.2
Dark room.....	..	..	2.2
Drawing.....	..	1.4	37.7
Gymnasium.....	..	14.2	31.1
Janitor's.....	6.4	1.4	..
Kindergarten.....	..	2.8	20.0
Lecture.....	3.2	2.8	24.4
Library.....	25.8	61.4	68.8
Lunch.....	3.2	4.2	8.8
Laboratories			
1. General.....	25.8	72.8	82.2
2. Agricultural.....	..	11.4	31.1
3. Home-making.....	6.4	11.4	33.3
Manual training.....	3.2	..	13.3
Museum.....	..	..	2.2
Music.....	..	..	13.3
Nurse's.....	..	..	2.2
Officers'.....	3.2	31.4	42.2
Physical education.....	..	..	2.2
Play room.....	9.6	15.7	17.7
Store room.....	9.6	4.2	13.3
Study hall.....	12.9	62.8	75.5
Swimming pool.....	..	..	..
Teachers' room.....	3.2	7.1	11.1
Training class.....	..	4.2	6.6
Uncertain.....	6.4	..	15.6

may be suspected by a study of the facts given in Table 54, showing the extent to which the rooms that are provided fall short of meeting the standards. This criticism is especially applicable to laboratories of less recent origin. There has been a tendency, especially

in the older buildings, to provide makeshifts, probably with the idea that a new building or remodeling would soon give adequate facilities.

The following statements regarding the deficiencies of different types of rooms are found altogether too frequently, as reported by the persons scoring the buildings.

1. Three teachers, 8 grades—"Library poorly heated."
2. Three teachers, 10 grades—"Laboratory poorly equipped and impossible of good work; 1 table for 8 pupils, used for other purposes."
3. Four teachers, 9 grades—"Laboratory for Biology also used as the one High School class room. Shelves for tables. Not well equipped. Too small."
4. Four teachers, 10 grades—"Science laboratory; lacks nearly all things. Has plain table and running water, but no disposal of waste. Apparatus is kept in alcove."
5. Five teachers, 12 grades—"Science laboratory too small and crowded. Lacks space for keeping apparatus. Lacks water, gas, etc. Lacks modern individual experiment table."
6. Five teachers, 12 grades—"Laboratory lacks practically everything."
7. Nine teachers, 12 grades—"Laboratory lacks modern equipment. Has only benches and sink. In basement; very low."
8. Five teachers, 12 grades—"Library room with practically no light."
9. Fifteen teachers, 12 grades—"Laboratory lacks water, work tables, storage space, blackboards, ventilation and gas."
10. Eleven teachers, 12 grades—"Manual Training room in small separate building fitted with benches; few tools. Heated by stoves. No ventilation."
11. Sixteen teachers, 12 grades—"Laboratory in basement; no water, no gas, poor light. Agricultural and Domestic Science in rented building $\frac{5}{8}$ mile from high school. Adequate rooms with full equipment, electricity, water, etc., and plenty of room."
- But hope that we shall ultimately have higher standards is fostered by such cases as the following:
1. Seven teachers, 5 grades—"Gymnasium 60' x 50' x 25'.

Shower bath for boys and girls. Well equipped. Hot and cold water. Well lighted."

2. Three teachers, 8 grades—"Teachers' room with couch, chairs, telephone, etc."

3. Eight teachers, 12 grades—"Domestic Science room, first floor, well lighted and equipped with tables, chairs, range, 2 oil stoves, cupboard, etc."

4. Thirty-one teachers, 12 grades—"Fine auditorium with balcony. Fine gymnasium with shower baths connected, good library room with book stacks."

5. Fifteen teachers, 12 grades—"Large lunch room with kitchen for serving hot lunches."

It is clear that some communities not only need special rooms not now provided, but that, except in the buildings of more recent construction, a critical analysis ought to be made by the community of such facilities as are provided.

5. IN WHAT RESPECTS ARE THESE BUILDINGS STRONG AND IN WHAT ARE THEY WEAK?

The values assigned the groups of items on the Strayer-Englehardt score card were distributed so as to show the extent to which the schools meet the standard. The values used were the original, not the adjusted scores. From Diagram 24 one may learn at a glance, through the location of the median point, where the buildings are strongest and where they are weakest. Thus the 5-9 teacher group is strongest on location and drainage of grounds, location and connection of class rooms, and class room equipment; it is weakest in fire protection, mechanical service systems, and special rooms. The diagram enables one to make readily a comparison of the standing of the different groups of schools on any item.

TABLE 54.—DISTRIBUTION OF THE SCHOOLS ON THE BASIS OF THE PERCENTAGE OF THE TOTAL NUMBER STUDDED RECEIVING
DIFFERENT PERCENTAGES OF A PERFECT SCORE

Percentage of Perfect Score =	Three to Four Teachers			Five to Nine Teachers			Ten + Teachers			
	0	1- 20	21- 40	61- 80	81- 100	0	1- 20	21- 40	61- 80	81- 100
I. Site:										
A. Location.....	..	..	16	26	58	..	..	9	27	64
B. Drainage.....	..	..	13	23	64	..	..	3	20	74
C. Size and form.....	..	10	19	48	23	..	..	17	16	40
II. Buildings:										
A. Placement.....	..	..	23	16	61	..	..	3	13	60
B. Gross structure.....	..	..	3	23	42	32	..	6	16	43
C. Internal structure.....	..	3	10	22	29	23	13	..	26	20
III. Service system:										
A. Heating and ventilation.....	9	10	29	26	26	..	6	25	40	16
B. Fire protection system.....	52	39	6	3	..	15	36	37	9	3
C. Cleaning system.....	3	10	32	45	10	..	3	17	60	17
D. Artificial lighting system.....	61	10	6	10	10	3	29	9	15	20
E. Electric service system.....	74	7	16	3	..	13	20	23	4	2
F. Water supply system.....	10	55	13	16	6	..	3	51	3	12
G. Toilet system.....	16	23	3	19	39	..	6	19	18	20
H. Mechanical service system.....	100	..	..	..	100	..	..	..	..	..
IV. Class rooms:										
A. Location and connection.....	..	..	32	10	58	..	4	3	21	19
B. Construction and finish.....	..	..	3	35	36	26	..	1	10	53
C. Illumination.....	..	16	26	32	26	..	..	9	31	31
D. Cloak rooms and wardrobes.....	16	6	26	23	19	10	4	7	29	19
E. Equipment.....	..	..	3	23	55	19	..	1	19	59
V. Special rooms:	..	..	48	45	7	..	..	17	73	7
A. Large rooms for general use.....	87	13	..	..	..	..	..	73	16	7
B. Rooms for school officials.....	68	29	..	..	..	..	..	17	36	32
C. Special service rooms.....	..	..	..	..	..	..	..	3	13	4

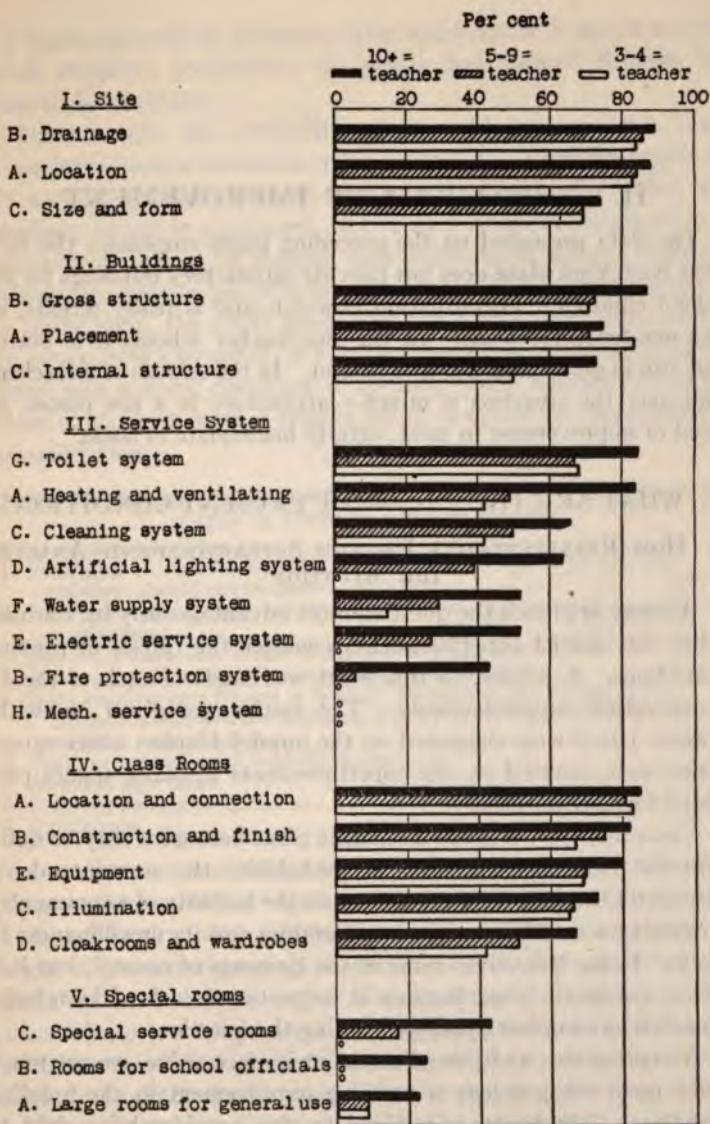


Diagram 24.—Median score of buildings with three or more teachers on each of the main groups of items considered. The median is interpreted in terms of the percentage of a perfect score that is attained.

II. A PROGRAM OF IMPROVEMENT

The data presented on the preceding pages emphasize the fact that New York state does not provide satisfactory buildings for its school children. The situation is worst, and is really serious, in the one-teacher schools. In the two-teacher schools it is better but still in great need of improvement. In the schools of 3 teachers and over the situation is mixed—satisfactory in a few places, in need of improvement in most, utterly inadequate in some.

A. WHAT ARE THE CAUSES OF PRESENT CONDITIONS?

1. HOW REPRESENTATIVE DISTRICT SUPERINTENDENTS ANALYZE THE SITUATION

We may approach the question most advantageously by learning what the district superintendents consider the causes of present conditions. A request to this effect was made of each of the 37 co-operating superintendents. The results are given herewith. Causes 1 to 5 were suggested on the inquiry blanks; other causes given were inserted by the superintendents in blank spaces provided for that purpose.

Cause number 7 is given a separate place because it may be quite different from cause 3. In all probability the superintendents intended to make a distinction between the inability of a community to maintain a satisfactory school building and its unwillingness to do so. Cause 9 involves some of the elements of cause 2, but it is given a separate place because it suggests not lack of knowledge so much as complete apathy regarding the question.

Accepting this analysis of causes at its face value, we get much light upon the problem of securing improvement in the building situation. The writer is inclined to give considerable weight to this analysis not only because the superintendent is directly in touch with the problem daily but because the analysis is supported

by facts that will be presented later and because it agrees so well with tentative conclusions the writer had formed through his travels in the state.

Undoubtedly the possibility of consolidation prevents some superintendents from issuing orders for condemnation or alterations. It may be a forlorn hope in most communities so far as the immediate future is concerned, but it does seem shortsighted to a professional officer to expend large sums upon schools that are within two miles or less of each other, particularly when the country is fairly level, the roads good, and the school attendance small. In many cases a program for improved buildings should go hand-in-hand with a frank discussion of securing better educational conditions of all kinds by that type of group co-operation represented in consolidation.

TABLE 55.—CAUSES OF PRESENT CONDITION OF SCHOOL BUILDINGS AS INDICATED BY DISTRICT SUPERINTENDENTS

Total number answering.....	24
1. Possibility of consolidation and hence extensive repairs on existing buildings should not be made.....	19
2. People believe existing conditions are satisfactory and would oppose improvement.....	17
3. District is financially unable to make needed improvement.....	14
4. (During last 3 years only) cost of building is too high.....	13
5. State requirements (stated in law) are inadequate and rulings of the Division of Grounds and Buildings are not sufficiently authoritative with the rural population.....	7
6. Factions prevent unity for building purposes.....	2
7. Afraid of high taxes.....	2
8. State regulations not enforced.....	1
9. Indifference.....	3

One cause not mentioned in Table 55—lack of persistent leadership on the part of the superintendent—deserves mention at least. It is so bound up with other causes, such as indifference and ignorance of patrons regarding proper standards, lack of sufficiently definite state standards, failure of the state to withhold funds when unsatisfactory conditions are not improved, and the non-existence of funds to reward progress, that it would be quite hopeless to attempt to determine its exact influence as a contributing cause.

The other causes given can readily be analyzed by groups and at least some objective data regarding their influence, together with suggestions for overcoming them, can be presented.

2. CAUSES OF PRESENT CONDITIONS AS REVEALED BY STATISTICAL ANALYSIS

One of the important causes appears to be the financial ability of the community. In order to study this factor more carefully, Tables 56 to 60 were constructed to show the relationship between the quality of a building as measured by the score card and the real valuation of the district in which the building is found. Two questions may be raised: (1) Are there communities financially unable to provide a satisfactory building without assistance? (2) Do communities actually exert themselves for better buildings according to their financial ability?

In Table 68 facts are presented indicating that the cost of improving a one-teacher building receiving about the median score and having deficiencies that are fairly typical would be around \$1,200. Assume that such a community would hope to meet the essential standards by the end of a four-year period. This would make a cost of \$300 for each of the four years. If now one takes the median real valuation of the one-teacher schools—\$91,000—he can readily compute that a community with this wealth must levy a rate of 3.29 mills to raise the \$300. Since the median real tax-rate levied by common school districts over and above the state funds now given is 5.44 mills, one can see that the rate of 3.29 mills necessary in the illustrative case is high for the purpose of building improvement. An inspection of, for example, Table 56 will make it clear that no matter what rate we set as reasonable for building improvement, there will be some districts in the state that cannot meet the desired standards without carrying a burden quite beyond reason. For example, one of the 37 schools in the 600-649 group having a valuation between \$25,000 and \$49,000 would need to levy a rate of from 6 to 13 mills. Clearly the state should do something to help such communities.

A second question involved is whether communities exert themselves on the matter of school building according to their ability. Is the good building in a relatively wealthy district and the poor building in a district that is poor relatively? To the extent that the wealthy districts do not have a good building some measures need to be taken to see that such communities do as much as they

TABLE 56.—DISTRIBUTION OF ONE-TEACHER SCHOOLS BY TOTAL SCORE (ESSENTIAL + ADDITIONAL) AND REAL VALUATION OF THE DISTRICT

		Real Valuation of District Expressed in Terms of Thousands of Dollars																					
Total Score	Under \$25	\$25-\$49	\$50-\$74	\$75-\$99	\$100-\$125	\$125-\$150	\$150-\$175	\$175-\$200	\$200-\$225	\$225-\$250	\$250-\$275	\$275-\$300	\$300-\$325	\$325-\$350	\$350-\$375	\$375-\$400	\$400-\$425	\$425-\$450	\$450-\$475	\$475-\$500	\$500-\$525	\$525-\$549	Total
1,000+
950-999
900-949
850-899
800-849
750-799
700-749
650-699
600-649
550-599
500-549
450-499
400-449
350-399
300-349
250-299
200-249
150-199
Under 150
Total	49	236	264	214	137	127	90	53	35	31	29	21	14	14	9	3	3	5	10	2	2	27	1,375

$Q_1 = \$56,000$. Median = \$91,000. $Q_3 = \$151,000$.

are able. The suggestion then is that if such a condition exists in regard to this problem, one or both of two procedures should be followed: A type of aid that will stimulate each community to do all it can should be devised; state legislation requiring reasonably high minimum standards should be passed. In the case of the district of low valuation some form of aid should be granted to render the necessary assistance.

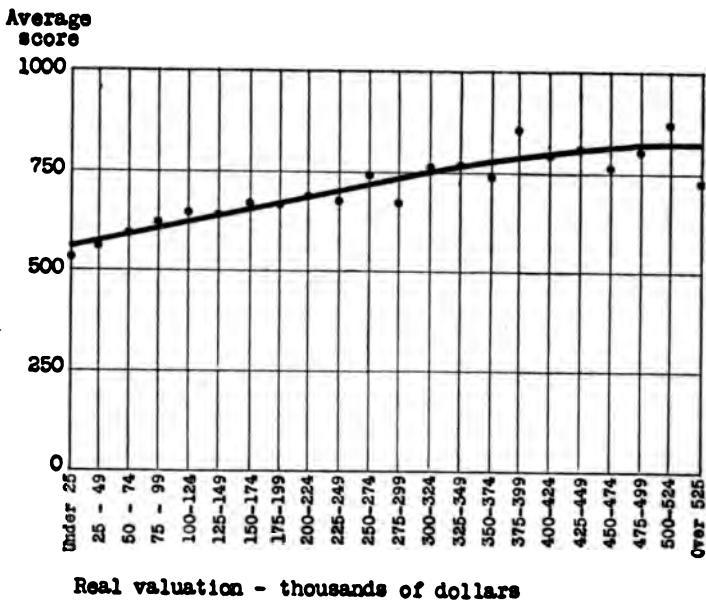


Diagram 25.—Relationship between median total scores (essential + additional) of one-teacher buildings and the average real valuations of the districts maintaining them. The dots show the average score for the different valuations. The line indicates the general trend

Table 56 gives a distribution of one-teacher schools by total score received and by real valuation of the communities. The real valuations are those set by the State Tax Commission. Inspection of this table makes it clear that there is some correlation between quality of building and wealth of district, since in general the schools with lowest score are in the poorer districts and those with highest scores are in the wealthier districts. However, it is

TABLE 57.—DISTRIBUTION OF TWO-TEACHER SCHOOLS BY TOTAL SCORE (ESSENTIAL + ADDITIONAL) AND REAL VALUATION
OF THE DISTRICT

Real Valuation of District Expressed in Terms of Thousands of Dollars																						
Total Score	\$25	\$49	\$74	\$99	\$124	\$149	\$174	\$199	\$224	\$249	\$274	\$299	\$324	\$349	\$374	\$399	\$424	\$449	\$474	\$499	Over \$500	Total
1,000+	4
950-999	10
900-949	3
850-899	1
800-849	1
750-799	3
700-749	13
650-699	2
600-649	9
550-599	1
500-549
450-499
400-449
350-399
300-349
250-299
200-249
150-199
Under 150
Total	65

clear that the correlation is far from perfect. Thus, of the 79 schools in the 750-799 group, 17 fall either in the valuation group that contains the median valuation or in groups below, while the other schools are scattered throughout the table, 1 having a valuation of \$525,000 or more.

The coefficient of correlation (Pearson's) is $.39 \pm .017$. That this correlation figure is no higher compels us to conclude that

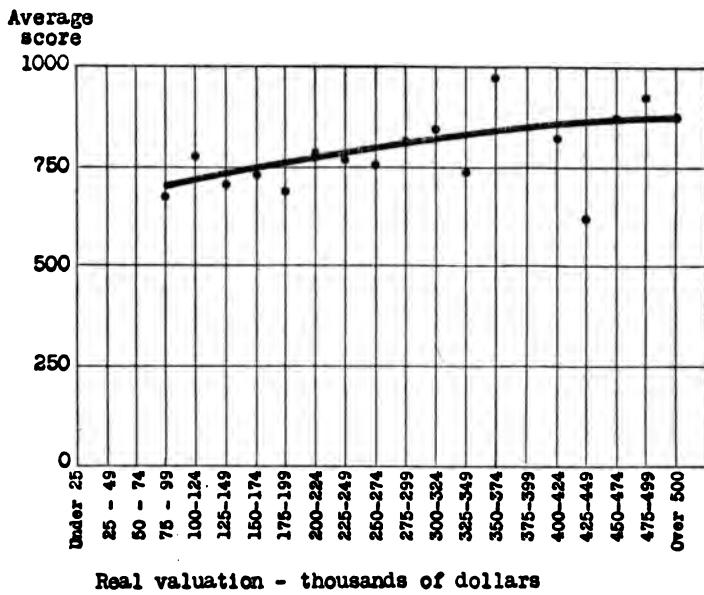


Diagram 26.—Relationship between average total scores (essential + additional) of two-teacher buildings and the average real valuations of the district maintaining them. The dots show the average score for the different valuations. The line indicates the general trend

while wealth of community is one factor in good school buildings in the one-teacher districts, it is not so significant as might be expected. Tables 57, 58, 59, and 60 give similar information for the four groups of larger buildings, as indicated. No correlation figures are presented for these groups for the reason that the number of cases presented in the tables is so small that the situation can be adequately set forth through the distribution tables. Except in

TABLE 58.—DISTRIBUTION OF SCHOOLS, WITH THREE TO FOUR TEACHERS, ON BASIS OF SCORE OF BUILDING AND REAL VALUATION
Real Valuation Expressed in Terms of Thousands of Dollars

Total Score	Under \$150	\$150-299	\$300-449	\$450-599	\$600-749	\$750-899	\$900-1,049	\$1,050-1,199	\$1,200-1,349	\$1,350-1,499	\$1,500-1,649	\$1,650-1,799	\$1,800-1,949	\$1,950-2,099	\$2,100-2,249	\$2,250-2,399	\$2,400-2,549	\$2,550-2,699	\$2,700-2,849	\$2,850-2,999	Over \$3,000 and Total	
1,000+																						
950-999																						
900-949																						
850-899																						
800-849																						
750-799																						
700-749																						
650-699																						
600-649																						
550-599																						
500-549																						
450-499																						
400-449																						
350-399																						
300-349																						
250-299																						
200-249																						
150-199																						
Under 150																						
Total	4	5	10	3	..	2	..	1	..	1	..	1	..	1	..	1	..	1	..	3	29	

TABLE 59.—DISTRIBUTION OF SCHOOLS WITH FIVE TO NINE TEACHERS ON BASIS OF SCORE OF BUILDING AND REAL VALUATION
Real Valuation Expressed in Terms of Thousands of Dollars

TABLE 60.—DISTRIBUTION OF SCHOOLS WITH TEN OR MORE TEACHERS ON BASIS OF SCORE OF BUILDING AND REAL VALUATION
Real Valuation Expressed in Terms of Thousands of Dollars

Total Score	Under \$150	\$150-299	\$300-449	\$450-599	\$600-749	\$750-899	\$900-1,049	\$1,050-1,199	\$1,200-1,349	\$1,350-1,499	\$1,500-1,649	\$1,650-1,799	\$1,800-1,949	\$1,950-2,099	\$2,100-2,249	\$2,250-2,399	\$2,400-2,549	\$2,550-2,699	\$2,700-2,849	\$2,850-2,999	\$3,000 and Over	Total	
1,000+																							
950-999																							
900-949	1																						
850-899																							
800-849																							
750-799																							
700-749	1																						
650-699																							
600-649																							
550-599																							
500-549																							
450-499																							
400-449																							
350-399																							
300-349																							
250-299																							
200-249																							
150-199																							
Under 150																							
Total	1	..	..	..	..	2	3	3	1	3	5	3	1	2	3	2	1	1	2	..	11	44	

TABLE 61.—DISTRIBUTION OF ONE-TEACHER SCHOOLS BY TOTAL SCORE (ESSENTIAL + ADDITIONAL) AND DATE OF CONSTRUCTION OF THE BUILDING

Total Score	Total
1,000+	5
950-999	2
900-949	19
850-899	48
800-849	19
750-799	11
700-749	27
650-699	48
600-649	11
550-599	48
500-549	27
450-499	11
400-449	11
350-399	11
300-349	11
250-299	11
200-249	11
150-199	11
Under 150	11
Total	1,178

$Q_1 = 36$ years. Median = 51 years. $Q_3 = 66$ years.

the one-teacher schools the number of cases is too small to justify final conclusions.

Another factor entering into the problem of the quality of the school building is its age. Table 61 gives a distribution of the one-

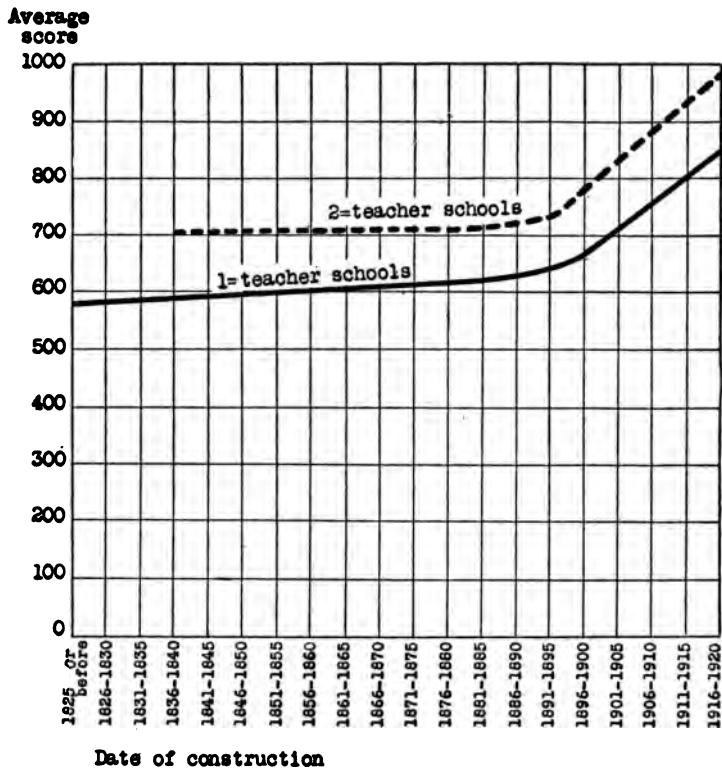


Diagram 27.—Relationship between average total scores (essential + additional) of one- and two-teacher buildings and the dates of their construction. These curves were determined by plotting the average for the various dates of construction, and then the line drawn by inspection, greater weight being given to those points which represented the greater number of schools

teacher schools by quality of building and date of construction. Are the older buildings the poorer ones? Diagram 27 presents the matter more concretely. It will be noticed that from 1825 to about

TABLE 62.—DISTRIBUTION OF TWO-TEACHER SCHOOLS BY TOTAL SCORE (ESSENTIAL + ADDITIONAL) AND DATE OF CONSTRUCTION
OF BUILDING
Date of Construction

Total Score	1825 or Before	1826-1830	1831-1835	1836-1840	1841-1845	1846-1850	1851-1855	1856-1860	1861-1865	1866-1870	1871-1875	1876-1880	1881-1885	1886-1890	1891-1895	1896-1900	1901-1905	1906-1910	1911-1915	1916-1920	Total	
1,000+																						
950-999																						
900-949																						
850-899																						
800-849																						
750-799	1																					
700-749																						
650-699																						
600-649																						
550-599																						
500-549																						
450-499																						
400-449																						
350-399																						
300-349																						
250-299																						
200-249																						
150-199																						
Under 150																						
Total	1	..	..	..	3	1	3	3	1	2	9	5	1	2	2	3	3	6	4	8	4	61

$Q_1 = 14$ years. Median = 36 years. $Q_3 = 54$ years.

TABLE 63.—DISTRIBUTION OF THREE- TO FOUR-TEACHER SCHOOLS BY SCORE AND DATE OF CONSTRUCTION OR BUILDING
Date of Construction

Total Score	1825 or Earlier	1826-1830	1831-1835	1836-1840	1841-1845	1846-1850	1851-1855	1856-1860	1861-1865	1866-1870	1871-1875	1881-1885	1886-1890	1891-1895	1896-1900	1901-1905	1906-1910	1911-1915	1916-1920	Total	
1,000+																					
950-999																					
900-949																					
850-899																					
800-849																					
750-799																					
700-749																					
650-699																					
600-649																					
550-599																					
500-549																					
450-499																					
400-449																					
350-399																					
300-349																					
250-299																					
200-249																					
150-199																					
Under 150																					
Total																					

1895 there is a very slight tendency for the newer buildings to improve in quality, while beginning about 1900 the rise is much more rapid. In the one-teacher schools the correlation figure for the entire period, 1825-1920, is $.12 \pm .021$.

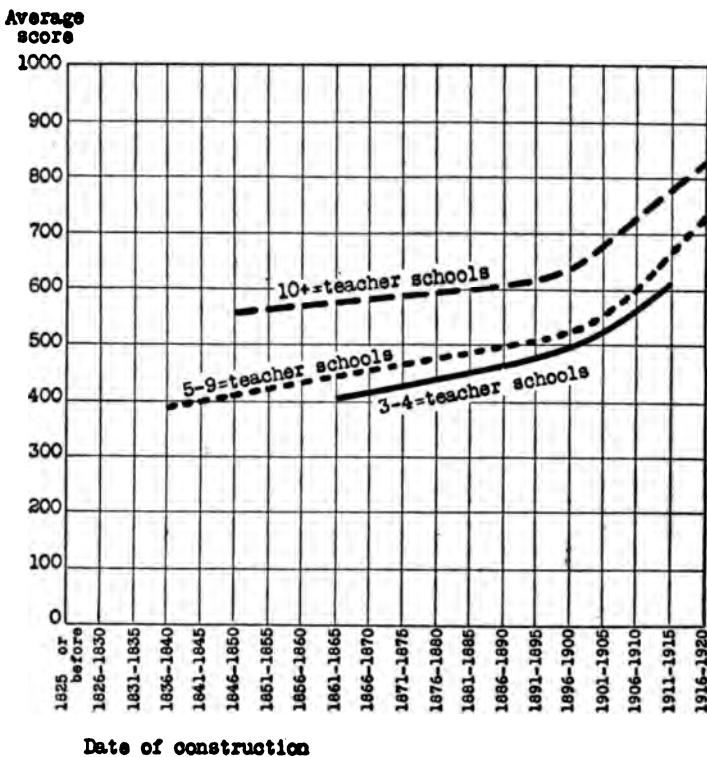


Diagram 28.—Relationship between scores of buildings with three or more teachers and the dates of their construction. These curves were determined by plotting the averages for the various dates of construction, and then the line drawn by inspection, greater weight being given to those points which represented the greater number of schools

In the hope of determining more definitely just when this more rapid rise begins, the buildings erected during the last 30 years were redistributed into two-year, rather than five-year, groups. These data give a coefficient of $.53 \pm .029$. This redistribution tends to

throw the date somewhat later. The first marked rise comes in the 1901-02 group. The 1903-04 group is at the same level. There is a slight rise in 1905-06 and a considerable rise in 1907-08. Thus while we are unable to say from the data at hand just when the more rapid rise begins, it is clear that it comes sometimes during the period 1901 to 1907. It is interesting to note that when the data for schools with two or more teachers are graphed (Diagrams 27 and 28), all five groups of schools show almost exactly the same tendency.

In attempting to explain this more rapid rise in the relationship between the quality of a building and its age one is led to see that age itself involves several factors. For example, one of these factors is quite certain to be the desire of the community for a better building. Now we know that there has been throughout the country greater interest in all phases of education in recent years, so that one would expect some tendency for the newer buildings to reflect this interest. Was there any event in the state that might explain a greater interest in the improvement of buildings that, as we have seen, begins somewhere between 1901 and 1907? In 1904 the unification of the State Department of Education and the Board of Regents took place; the state superintendency was developed into the state commissionership; and new legislation regarding building standards was enacted. Here undoubtedly was a stimulus.

In looking for causes of improvement in school buildings all legislation should, however, be evaluated. There are four legislative acts and one order of the State Department that would be likely to have more or less influence. These may be considered from two points of view: (1) the effect these had upon the *actual score* of a building; (2) the effect they had on the more rapid rise in score in recent years.

(1) Since 1864 the school commissioner (now the district superintendent) has had power to condemn unsatisfactory buildings. If this law was actually a factor in improvement, either it was not an important one until about 1900, as is clearly shown by the low scores presented in Diagram 27, or the standards that satisfied the superintendents were considerably below those used in the scoring

TABLE 64.—DISTRIBUTION OF FIVE- TO NINE-TEACHER SCHOOLS BY SCORE AND DATE OF CONSTRUCTION OR BUILDING

Total Score	Date of Construction	Total
1,000 +		
950-999		
900-949		
850-899		
800-849		
750-799		
700-749		
650-699		
600-649		
550-599		
500-549		
450-499		
400-449		
350-399		
300-349		
250-299		
200-240		
150-199		
Under 150		
Total		62

TABLE 65.—DISTRIBUTION OF SCHOOLS WITH TEN OR MORE TEACHERS BY SCORE AND DATE OF CONSTRUCTION OR BUILDING

Total Score	1825 or Earlier	1826-1830	1831-1835	1836-1840	1841-1845	1846-1850	1851-1855	1856-1860	1861-1865	1866-1870	1871-1875	1876-1880	1881-1885	1886-1890	1891-1895	1901-1905	1906-1910	1911-1915	1916-1920	Total	
Date of Construction																					
1,000+																					41
950-999																					
900-949																					
850-899																					
800-849																					
750-799																					
700-749																					
650-699																					
600-649																					
550-599																					
500-549																					
450-499																					
400-449																					
350-399																					
300-349																					
250-299																					
200-249																					
150-199																					
Under 150																					
Total	..	1	..	3	..	2	..	2	..	1	2	..	2	..	3	1	2	4	3	1	6

of the buildings. Data presented later (Table 66) indicate that for a few years after 1912, when the present district superintendency was substituted for the old school commissionership, there was some interest on the part of some of the superintendents in better buildings. This is evidenced by the number of orders for condemnation and alteration issued. However, since this law applied to all school buildings and would be more likely in practice to apply to the older ones, improvement in recent years cannot be largely attributed to the exercise by the district superintendent of the power to condemn or to require alteration.

(2) Since 1887 there has been the statute regarding toilets known as the health and decency act. This law might affect the score of a one- or two-teacher building. However, applying as it did to all buildings without regard to date of construction, it follows that this law cannot account for the rapid improvement beginning between 1901 and 1907.

(3) A flag and pole were required by law in 1898. Since only 10 points on the score card are allowed for these, and since the law applied to all buildings, this statute cannot be considered as of great significance in the general improvement of buildings.

(4) In 1904, when the state educational reorganization took place, provision was made for state approval of new and remodeled buildings. The requirements that applied to one- and two-teacher buildings account for about 100 points on the score card, about 45 of which would not likely be found in most buildings erected earlier. There is some doubt as to whether the law gives the commissioner of education power to make other requirements, but whether or not this is the case it is true that the commissioner, through the building specialists of the Department, had an opportunity to advise on other matters communities whose building plans were under consideration. Since these requirements applied only to new or radically remodeled buildings it could readily be an important factor in the improvement beginning between 1901 and 1907. It is entirely likely also that the number of factors on which advice would be given would show a tendency to increase as time went on.

(5) In 1916 the State Department issued an order requiring sanitary toilets (p. 50) in certain schools. Data collected in this

study show that about one-third of the one-teacher schools complied with this order and that where this was done improvement in certain particulars (see pp. 52-54) generally resulted. These new standards might effect the score of a building for as many as 30 points, and would therefore have an appreciable effect upon the score of a building. Aside from the fact that the order requiring these toilets exempted, among others, buildings that were likely to be condemned or remodeled, there is no evidence that the age of a building was a factor in determining the installation of the chemical toilets. This order therefore cannot account for the improvement since 1901-1907.

In brief, then, it would appear that each of these requirements had influence in increasing the actual score of a building. It would appear that none of them except the law of 1904 can account for the relatively rapid improvement of the last quarter century.

Data are not available that enable us to separate and measure the relative influence of legislation and the desire of the community for better things. As a matter of fact, the two probably act together, for it is more than likely that a statute, especially one such as that of 1904, would tend to stimulate thought regarding better building standards on the part of not only state and county school officials but of local trustees and patrons as well.

Still less are there facts by which one can isolate and measure the components of these factors of legislation and education. Especially is this true of the second, for education of the community may include any or all of the following factors that stimulate people to think regarding their buildings: presence of a modern building in a community; leadership exercised by district superintendents; the power of the district superintendent to condemn, acting as a suggestion; state bulletins and inspections; state law; farm organizations; the increasing influence in community affairs of woman, who has shown herself especially interested in education; farm papers; local papers, etc.

However, in spite of the complexity of the situation and the inadequacy of the data as a basis for analysis, it appears reasonable to conclude: (1) that wealth of community is a factor of some weight; (2) that date of construction has little influence until

recent years when legislation and community interest together (probably the former largely) have been responsible for some improvement. These three factors: education of the community to a realization of the need for better buildings; legislation with respect to adequate minimum standards; and state aid may now be considered in detail.

B. A MORE ENLIGHTENED PUBLIC OPINION NEEDED

The writer is convinced that this is the fundamental cause of the present situation. If citizens demanded proper lighting, heating, and ventilation, sanitary toilet conditions, effective methods of cleaning, playground apparatus, large playgrounds, etc., these would come into more general existence without state standards or state aid. The superintendents consider it a major cause, and the analysis of data presented in the preceding section indicates that it has weight. There are progressive individuals in every community, but the mass as yet remain unmoved by the realization that school building standards have made great forward strides in the last quarter century.

The situation is readily understandable on a little reflection. Approximately two out of every three school buildings in the state are one-teacher buildings. Of the 1,438 one-teacher buildings studied, only 6 have a score of 900 or above as indicating a reasonably modern plant. As the farmer drives about he has thus about one chance in 240 of seeing a building that will impress him with the inadequacy of the one in his home district. He gives little attention to the larger buildings that he sees for the reason that he considers such to be quite beyond attainment. The suggestion, then, that his home school is "as good as the rest of them" is too strong to be resisted. Were he to meet frequently a modern building in a situation similar to his, he would undoubtedly be stimulated to want something better or at least would have the disquieting feeling that all was not as it should be. The fact that the farmer has in most cases seen this same building all his life, that he, his father, and sometimes his grandfather (the median age of one-teacher buildings is 51 years; while 25 percent of them are

66 years or more old), attended the same school is additional reason for his complacency.

The responsibility for leadership in securing a wider knowledge of modern building standards rests primarily in the State Department of Education. The citizens of New York, through the legislature, have created this organization because they have believed in education as a preparation for citizenship and because they have felt the need of a professional group to study the educational needs of the state, to enforce minimum standards wherever these have been provided, and above all to become the leader to new and better things in education. The direct agent of the State Department in the matter of the school plant is the Division of Grounds and Buildings.

This division was established in 1915, though previous to that time building inspections were made through the Inspections Division of the Department. The chief functions of this Division of Grounds and Buildings are: (1) Approval of plans for new buildings, for remodeling of old buildings, and for additions to and repairs on present structures (where the cost is over \$500) in cities of the third class, villages, and rural schools; (2) inspection of buildings that are unsafe or unsanitary; (3) inspection of buildings under construction where this seems desirable; and (4) certain advisory, educational, and leadership responsibilities, including: (a) conferences with school officials; (b) attendance upon special meetings called to vote appropriations for improving conditions when the local authorities so request; (c) inspection of completed buildings, also upon request, preliminary to final payment of contractor; (d) adoption of measures to interest communities in bettering the school plant.

The Division employs four persons—a chief, an inspector, a consulting architect, and a stenographer. With the exception of the architect, added in 1921, the force has been of this size since the creation of the Division.

Activities of the Division of an inspectorial and educational nature are fairly extensive. During the past year (1920-21) the inspector attended 69 school meetings, held 169 conferences with trustees and boards of education, inspected 181 school buildings,

and made tests of the heat and ventilation in 26 new buildings. He estimates that in approximately 65 percent of the cases the improvements recommended have been already carried out in full, in 15 percent in part, while in 20 percent nothing has been done. In performing his duties the inspector travels approximately 31,000 miles a year. About 8,000 letters were written by the Division in 1920-21. The Division supplies photostatic prints of building plans to officials who request them. This may become a most important service, especially to the poorer districts that are unable to employ an architect. Such prints have been prepared for 15 types of one-room buildings, 12 two-room, 2 three-room, 6 four-room, and a few larger buildings. During the school year 1919-20, 295 such prints were supplied; during 1920-21, 401 were furnished. The Division has issued, since 1911, the following bulletins:

Date	Title	No. of copies
Dec., 1911.....	Law Pamphlet 1, School Bldgs., Sites and School Dist. Bonds	4,850
Aug., 1912.....	11th Dept. Report 1915, vol. 3, School Buildings and Grounds	5,000
May, 1913.....	Specifications for plans 3 and 4	200
March, 1917.....	Extract from vol. 3 of 10th ann. report	2,000
May, 1917.....	Extract from vol. 3 of 11th ann. report—Toilet Facilities	2,000
June, 1919.....	Law Pamphlet 1, School Bldgs., Sites and School Dist. Bonds	2,000
Oct., 1919.....	Law, Rules and Regulations and General Information	1,000
Feb., 1919.....	Law, Rules and Regulations and General Information, Univ. Bul. 720	1,500
Total		18,550

Partially complete records in the office of the Division show that plans for remodeling, for making additions, for heating and ventilation, and for new buildings of all kinds were approved as follows: 1915, 129; 1916, 108; 1917, 86; 1918, 55; 1919, 165; 1920, 126.

Such data give a general notion, at least, of the activities of the Division. It is clear that it is not only performing its inspectorial duties so far as size of staff permits, but is making an earnest effort to serve the people of the state in other ways.

But there is need of *unusual* effort if school building facilities

are to be improved within a reasonable time. The dangers in a policy of state coercion were shown in the attempt to secure sanitary toilets throughout the rural schools. Chief dependence must clearly be placed upon the policy of bringing the farmers themselves to demand improvement.

The first step in such a program will naturally be the securing of facts regarding present conditions. The state should make a survey from time to time of certain phases of good housing, though the district superintendent is in a particularly strategic position both to secure the facts and to utilize them effectively. He may make a survey of all or part of the schools in his territory. Such a survey should be comprehensive, such as was undertaken in this study, covering all the important phases of a school plant, when the superintendent wishes to arouse the people to a realization of what they now have as compared with what modern hygienic standards require. The survey may deal with one or two phases of the plant only—*e. g.*, toilets and blackboards—where there seems little hope of getting a comprehensive program of improvement accepted by the constituency. The more the superintendent can throw upon the patrons themselves the responsibility for securing such facts, even though they may not have scientific accuracy, the more effective his program is likely to be. Home Bureaus, Granges, Farm Bureaus, Parent-Teachers' associations may be utilized for this purpose.

The proper use of such facts is of equal importance. Every legitimate avenue of publicity should be employed. The state may publish and distribute significant facts presented in an attractive and vivid manner. While the state has distributed during the last 10 years pamphlets to the number of 18,550, it should be noted that this number is not sufficient to meet the demand that ought to exist in a state having over 10,000 school buildings in rural sections, and the character of the bulletin is usually not such as to arouse interest on the part of the typical educational layman. Most of these bulletins contain the statutes regarding buildings, the rulings and the suggestions of the Division, together with a rather comprehensive bibliography on building standards. Such bulletins are necessary in order to give the public professional information. It

would be well, however, if publications of a more popular sort, giving facts, illustrations, reasons for standards, etc., were made available to the general public. One of the publications of the Division, that for August, 1912, is a large volume of 440 $9\frac{1}{2}$ " x 12" pages, containing not only the material of the typical smaller bulletins, but giving besides several hundred illustrations of buildings and plans, together with much valuable statistical data regarding sanitary conditions, costs, number of buildings, etc. The difficulty with this volume is that it is too cumbersome and costly to attain a large circulation. Farm and local papers, weekly or monthly bulletins, even lantern slides and moving pictures may be utilized by local leaders to spread significant facts and other information regarding conditions. Some of these methods have been used by the Department but none have been so extensively employed as they might. All this publicity should result in discussion within the local social and professional organizations of means and methods of securing improvement. It is an unusual citizen indeed who will refuse a proper school home to children when he really understands conditions. One of the important tasks of the rural school leader is to collect and to present, tactfully yet persistently, facts that will accomplish this result. The writer has confidence that such a program would, within a few years, lead the majority of communities to condemn their own buildings. This state as well as others can give illustrations where persistent leadership has had exactly this effect (see some of the accompanying photographs).

Briefly, then, the *approach* to this whole problem should be through an attempt to lead the community to demand better things rather than through legislation. In this way there may be built up in time that knowledge and that interest that will not only insure immediate reforms, but will provide the stimulus for constantly accelerated progress in educational affairs.



The old building



The new



Interior view showing jacketed stove

Assessed valuation at time of building, \$49,310. Paid by a ten-year bond issue. Cost of building and equipment, exclusive of community labor about \$2800. The situation was canvassed by a committee and plans and costs submitted at the school meeting. A better community spirit as the result of general participation in the solution of a common problem was one of the by-products of this building campaign. A splendid illustration of what may be done through community effort.



Bubbling fountain and improved blackboard

What one community did through community cooperation .



New building, front view (the grounds were not yet cleared at time photograph was taken). Score: 800 + 33



The baseball section of the 1½-acre site of the new building Where improvement would give a better score: cleaning system; fuel room; artificial lighting; first-aid outfit; playground apparatus What No. 11, Galway, Saratoga County, did



The old building



C. HIGHER AND MORE DEFINITE MINIMUM STANDARDS

But we should not rely entirely upon popular education to accomplish these results. The state has a responsibility regarding the education of its future citizens, and in meeting the responsibility it should and does set standards below which no community may be permitted to fall.

1. THE PRESENT SITUATION

An analysis of such requirements in New York reveals an indefinite and inconsistent situation.

(a) In 1904 the law¹ provided that "no schoolhouse shall hereafter be erected, repaired, enlarged, or remodeled in a city of the third class or in a school district, at an expense to exceed \$500, until the plans and specifications thereof shall have been submitted to the Commissioner of Education and his approval indorsed thereon. Such plans and specifications must show in detail the ventilation, heating and lighting of such buildings." Further provision is made that the Commissioner shall not approve plans except when the following requirements are met:

- (1) At least 15 square feet of floor space and 200 cubic feet of air space for each pupil to be accommodated in each study and recitation room.
- (2) At least 30 cubic feet of pure air every minute per pupil.
- (3) The facilities for exhausting the foul or vitiated air to be positive and independent of atmospheric changes.
- (4) All halls, doors, stairways, seats, passageways and aisles and all lighting and heating appliances and apparatus shall be arranged to facilitate egress and afford adequate protection in cases of fire or accident.
- (5) All exit doors shall open outwardly, and shall, if double doors are used, be fastened with movable bolts operated simultaneously by one handle from the inner face of the door.
- (6) No stairway to be constructed with winding steps; no door to open upon a flight of stairs except where there is a landing at least the width of the door.

¹ Education Law, 1920, sec. 451.

(7) All school buildings, except in New York City, having more than two stories, must be provided with fire escapes kept available during school hours and free from obstruction.

(b) In addition to the above the so-called Health and Decency Act of 1887 required the trustees in school districts to provide "at least two suitable and convenient water closets or privies for each of the schools under their charge, which shall be entirely separated from each other and have separate means of access, and approaches thereto separated by a substantial close fence not less than seven feet in height. It shall also be the duty of the trustees to keep such out-buildings in a clean and wholesome condition."¹ In union free school districts two such closets are to be provided and maintained for each school. Failure "by the trustee to comply with the provisions of this section shall be sufficient grounds for their removal from office and for withholding from the district or city its share of the public funds of the State."

(c) The law also requires that a United States flag be displayed upon or near every public school building during school hours, and at such other times as the school authorities may direct.²

(d) The district superintendent has power to "make an order condemning a schoolhouse if he finds upon examination that such schoolhouse is *wholly unfit for use and not worth repairing*"³ (italics are not in the law). When such decision is made the superintendent sends the order to the trustee of the district and a copy of it to the Commissioner of Education. This order is to state the sum which the superintendent considers necessary to erect a school building suitable to the needs of the district. When the order is received the trustee is to call a meeting of the voters of his district to consider the question of a new building. This meeting has the power to pass upon such questions as size of building and material to be used, but it may not reduce the estimate of the superintendent by more than 25 percent. Should the district vote no tax within 30 days from the time of holding the first meeting to consider the question, the trustee is required to contract for the building of a schoolhouse and to levy the necessary tax, which tax shall not be

¹ Education Law, 1921, sec. 457.

² Education Law 1921, sec. 710.

³ Education Law, 1921, sec. 456.

larger than that estimated by the superintendent nor smaller than such estimate by more than 25 percent.

The law also confers upon the district superintendent the power "to direct the trustees of any district to make any alterations or repairs to the schoolhouse or out-buildings which shall, in his opinion, be necessary for the health or comfort of the pupils," but the amount of such alterations is not to exceed \$200 in any year. Likewise the superintendent may direct the trustee to make any repairs or alterations to school furniture or to provide new furniture if he deems the present furniture is insufficient or unfit for use and not worth repairing. Not over \$100 per year may be involved in such an order.

In brief then all schools must meet the standard of toilets and must display a flag (*b*) and (*c*), p. 122); any school may be condemned by the district superintendent when he finds it "wholly unfit for use and not worth repairing," and the superintendent may direct alterations or repairs to the building not exceeding \$200 per year or improvements or additions to the furniture not exceeding \$100 per year. In cities of the third class and in school districts, new schools or schools being remodeled to the extent of \$500 must meet the seven requirements stated in (*a*), p. 121. In addition, the Division of Grounds and Buildings has certain other requirements and suggestions that are used in approving plans. In practice these requirements and suggestions have very great influence in the approving of such plans as come to the State Department and doubtless have considerable influence in educating some communities to better standards.

Does the State of New York go as far as it should in setting those standards that will provide adequate housing for its future citizens during their period of schooling? The answer is clear. In the first place the authority of the district superintendent to condemn a building is couched in most unfortunate language. It is an extremely difficult matter to say when a building is "wholly unfit for use and not worth repairing." A building could violate practically every standard commonly accepted for school buildings and still not be *unfit* for use. Certainly there is little to make clear to the community that its facilities are unsatisfactory and there is no

encouragement for the superintendent to use the power of the state where a community has shown an unwillingness to act after advice has been given. While it is to be hoped that the exercise of such state authority will be relatively infrequent, there can be no doubt but that the authority to so act should be unequivocal.

TABLE 66.—ORDERS FOR CONDEMNATION AND ALTERATIONS ISSUED, 1912–1921¹

Year	Condemna-tions	Alterations	Total	NumberAppealed	AppealsPartlySustained
1912	29	51	80	1	1
1913	19	34	53	0	0
1914	18	22	40	4	2
1915	5	18	23	1	0
1916	7	16	23	0	0
1917	8	0	8	0	0
1918	3	16	19	0	0
1919	5	18	23	1	0
1920	8	11	19	1	1
1921 ²	2	4	6	0	0
Total	104	190	294	8	4

The effect of such indefiniteness is reflected in the small number of orders for condemnation and alteration issued from 1912–21. This is shown in Table 66. It must be understood that this number does not show the total number of buildings that have been improved, for there are some communities that have acted without receiving official orders to that effect. When one considers the small number of the orders that were appealed, one gets additional evidence that the situation was so bad as to be indefensible or that when the issue developed the progressive element of the community was able to dominate. It is a matter of considerable significance in connection with the administration of the law to learn that none of the appeals were sustained by the Commissioner and

¹ From original orders on file in the office of the Law Division, State Department of Education.

² Up to Sept. 15, 1921

that in those cases where the appeal was partially sustained it was done upon some basis other than the unfitness of the building, as, for example, the cost of the improvements, and opportunity to repair rather than rebuild.

Table 67, showing the distribution of orders for condemnations and alterations, is interesting as showing the number of districts in which no orders have been issued during this period of almost ten years.

TABLE 67.—DISTRIBUTION OF ORDERS FOR CONDEMNATION AND ALTERATIONS AMONG THE SUPERVISORY DISTRICTS, 1912-1921

Number of Orders Issued	Number of Supervisory Districts	Number of Orders Issued	Number of Supervisory Districts
0	108	8	3
1	40	9	2
2	22	10	0
3	11	11	1
4	11	12	0
5	4	13	2
6	2	14	0
7	1	15	1

Not only is the basis for condemnation indefinite, but such standards as are set by statute are quite inadequate. It is important to have the several standards now provided specifically for new buildings, but many others are needed. To set down specifically what these standards should be is an intricate problem. We can doubtless agree that a good school plant should accomplish the three purposes that have been stated before, namely: to provide those facilities that will make provision for—(1) proper intellectual development; (2) physical development; (3) safeguarding health and morals. But science has not fully demonstrated in many cases just what is necessary to accomplish these purposes, so that in lieu of such scientific standards we must fall back upon experience and well-established professional knowledge. Furthermore, minimum standards must always be more or less a matter of expediency, for usually a state cannot enforce standards that are

too far in advance of actual practice and hence of public opinion. Standards must, therefore, always be a progressive matter. Recognizing these difficulties, the writer nevertheless ventures to suggest that the State of New York should, within the next five years, hold for approximately the standards stated below.

2. PROPOSED MINIMUM STANDARDS FOR ONE- AND TWO-TEACHER BUILDINGS

Except where otherwise stated, the specific requirements should be approximately those given in the standards used in scoring the buildings. The items here presented are numbered to correspond with the same items on the score card, and the values assigned are those that would be given on the score card.

Items	Credit Value
1. Size of class room.....	40
3. Window placement.....	35
4. Glass area.....	30
5. Shades.....	15
8. Color scheme.....	20
9. Blackboard (composition board also accepted).....	30
12a. Pupils' desks.....	40
13. Seating arrangement.....	25
24. Heat and ventilation.....	70
26. Cleaning system.....	20
27. Water supply.....	60
29. Toilets (evaluated in terms of result rather than kind).....	65
32. First aid outfit.....	10
34. Flag and pole.....	10
39. Condition of repair.....	30
41. Orientation.....	25
43. Size of grounds.....	25
	<hr/>
	550

To these 550 points of the score card might well be added—

36. Material of construction.....	25
37. Foundation.....	15
38. Roof.....	20

since the requirements on these points are the least that are likely to be found. This makes a total of 610 on the score card. It should be remembered, however, that not any 610 out of the 1,000 points would satisfy the minimum requirements, but only the ones indicated above.

These, then, represent the writer's judgment as to the least that New York should require in the way of a building and its permanent equipment in order to insure proper facilities for the pupil's physical, intellectual, and moral development. But the ordinary community should not be satisfied with these: it should aim at the 1,000 points of essential standard credit, while a really progressive community will provide those facilities that will justify from 250 to 300 points of additional credit. As to how far the minimum standards must be modified on grounds of feasibility can be determined only after the results of the educational campaign are evidenced. If the definite statement of these standards is postponed for a period of, say, two years, and if the educational campaign has been effectively conducted, very little modification ought to be necessary.

With such standards we have then met the serious difficulties in the present situation so far as they are due to state standards: the indefiniteness regarding the standards under which a district superintendent may condemn a building or order repairs or improvements in the furniture; the lack of adequate minimum standards for new or remodeled buildings and for additions; the almost complete lack of any standards for buildings that do not come under the law regarding new or remodeled buildings and yet clearly are not in the class that would justify an order for condemnation.

D. FINANCIAL PENALTIES AND REWARDS

The enforcement of minimum standards will be easier and progress beyond these standards will come more rapidly if the community has a financial incentive. If failure to meet minimum standards is met by a considerable reduction of state funds and if progress beyond these standards means more funds from the state, the enforcement of the minimum standards will in most communities be automatic.

1. A SUGGESTION OF PROCEDURE

The presentation of a detailed plan for financing schoolhouses is not the responsibility of this Division of the Survey but of the

Division of Finance. It may be proper, however, to point out here the general procedure that may be followed.

(a) Provision should be made that no community will fail to meet minimum standards regarding the school plant *merely* because of financial inability. Tables 56 to 60 show that there are some communities with comparatively little wealth that cannot provide proper facilities without an unduly high tax burden. Such communities should receive assistance from the state. Before such aid is actually paid the state should inspect the work to see that it conforms to the specifications of the contract.

Any sound plan for state assistance will, of course, be based upon the development of all phases of desirable educational results, not upon any one. Therefore we may expect the state to safeguard its funds by refusing aid for buildings to small schools except where these are necessary because of topographical conditions. It is unthinkable that the state of New York would adopt a financial policy that would *encourage* the improvement and continuance of *all* the one-teacher schools now in the state.

(b) A penalty should be established and enforced for any community that fails, through neglect, to provide facilities at least equal to the state standards. Though the state now has authority under section 457 (4) to withhold public funds for failure to provide satisfactory toilets as defined by law (see Section "C" above), the law has been executed in only 9 cases since 1911. According to Department officials it has been the policy of the Department to refrain from withholding public money until notice has been served and ample opportunity given to comply with the requirements. Such warning is, of course, only a matter of fairness to the community, but in view of the toilet situation, as revealed by the facts collected in this study and implied in the sanitary toilet order of 1916, it is doubtful if such leniency, evidenced by the few cases of withholding funds, can be justified in the interest of education. Unless penalties provided by law are enforced strictly, yet with discrimination and justice, they might as well not exist. It is clear also that if the use of a penalty on buildings is to accomplish its purpose, such penalty should extend to all minimum standards, not to toilets alone.

(c) A community that exceeds the minimum standards should receive a financial reward. A plan for accomplishing this may be found in Dr. Updegraff's report on finance.

2. WHAT WOULD IT COST TO IMPROVE A TYPICAL ONE-TEACHER BUILDING?

To most communities this is an important question. In Table 68 is given an estimate of what it would cost to improve the school for which data are given on pages 23 to 26 to that point that would—(1) Meet the proposed minimum standards, and (2) meet the essential standards outlined for the score card. The figures here given are based upon costs for the autumn of 1921. They have been prepared largely by Supt. M. G. Nelson, of the fifth supervisory district of Delaware Co., who has taken local conditions into account. For this reason variations in certain items are to be expected for different communities. In the cost assigned each facility added there has been included the labor cost of installation.

It is perhaps unnecessary to say that in a community where there is likely to develop in the near future a sentiment for consolidation no large sums should be spent on improving the present plant. Only the most serious difficulties should be met. It is clear also that, where it seems wise to continue indefinitely the present small schools, improvements will ordinarily be made gradually. What is important in such a situation is that the community decide whether remodeling the present plant rather than rebuilding would be most economical, then that community effort be directed to achieving the ends sought. This can be accomplished only by persistent leadership on the part of state officials and district superintendents.

E. SUMMARIZING STATEMENT

Thus have been presented what this investigation has shown to be the three fundamental factors in the New York school building situation: public opinion; state legislation; financial ability of the community. These factors suggest the points of attack in securing better conditions.

The *approach* to the whole problem should be through leading

